

**OVERSIGHT HEARING ON DEPARTMENT
OF ENERGY**

HEARING

BEFORE THE

MILITARY PROCUREMENT SUBCOMMITTEE

OF THE

COMMITTEE ON NATIONAL SECURITY
HOUSE OF REPRESENTATIVES

ONE HUNDRED FOURTH CONGRESS

SECOND SESSION

HEARING HELD
SEPTEMBER 19, 1996



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OVERSIGHT HEARING ON DEPARTMENT OF ENERGY

HOUSE OF REPRESENTATIVES,
COMMITTEE ON NATIONAL SECURITY,
MILITARY PROCUREMENT SUBCOMMITTEE,
Washington, DC, Thursday, September 19, 1996.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 2118, Rayburn House Office Building, Hon. Duncan Hunter (chairman of the subcommittee) presiding.

OPENING STATEMENT OF HON. DUNCAN HUNTER, REPRESENTATIVE FROM CALIFORNIA, CHAIRMAN, MILITARY PROCUREMENT SUBCOMMITTEE

Mr. HUNTER. The subcommittee will come to order. The Military Procurement Subcommittee meets today to continue its oversight of Department of Energy plans, programs, and policies, and the National Security Committee has budgetary jurisdiction for well over half the Department of Energy [DOE] budget. Continued aggressive oversight of DOE is needed in light of the obvious stakes involved and because of concerns that DOE is failing to fulfill its obligations as steward of the Nation's nuclear stockpile and complex.

We invited Secretary O'Leary to be with us today, but she is not available and has directed her deputy, Mr. Charles Curtis, to be with us, and he is here, and I see, Dr. Curtis, you are also joined by our old friend Dr. Vic Reis and by Major General Joersz, who is the Principal Deputy Assistant Secretary for Military Application. Dr. Reis, of course, is Assistant Secretary of Energy for Defense Programs.

The question before us today is simply this: is the Department fulfilling its commitment to the President and the American people to ensure that America's nuclear stockpile is safe, secure, and reliable in the coming decades? Based on the evidence that we have to date, I believe that most impartial observers would be forced to conclude that the answer is no, the Department has abdicated its leadership role in this vital area. This is not a direct criticism of you, Mr. Curtis or Dr. Reis, because I know you are both struggling mightily to focus attention on these matters within the Department.

In fact, without your perseverance and managerial expertise, I suspect the situation would be much worse than it is now. Instead, I level this criticism at the Clinton administration as a whole which in my estimation has given our weapons scientists, engineers, and skilled laborers what I consider to be a "mission impossible," maintaining a safe and reliable nuclear stockpile in the absence of nuclear testing.

The mismatch between the administration's rhetoric and its actual deeds has been, in my estimation, profound and growing. On the one hand, administration officials have testified that a modern, capable nuclear complex, staffed by motivated, skilled scientists, engineers, and laborers, is imperative if we are to retain safe, secure, and reliable nuclear weapons. On the other hand, the administration has failed to take actions to sustain—much less modernize—the complex and has ushered in a period of low morale amid a potentially devastating outflow of skilled personnel at the laboratories and the production plants, let me cite some examples.

First, the Clinton administration rejected the sound advice of experts including experts from the weapons laboratories and the Department of Defense who argued in favor of the only tried-and-true approach to assuring nuclear competence—that is nuclear testing—in exchange for the prospect of an international agreement banning all nuclear tests. Yet, the arguments against the recently concluded Comprehensive Test Ban Treaty are appearing to be more overwhelmingly convincing everyday. For example, the accord is not effectively verifiable, and it will do nothing to prevent nonsignatory nuclear wannabes from achieving a nuclear capability. It might well foster proliferation by undermining the confidence of our friends and allies in the credibility of the U.S. nuclear deterrent.

Think about this for a minute. North Korea achieved a nuclear capability without conducting a test, and Iraq never tested but was within months of producing a nuclear bomb. A Comprehensive Test Ban Treaty [CTBT] will, however, prohibit the United States from undertaking a limited test program even if such tests are intended to fix the safety problem on a given weapon design.

Second, with the President's decision to embrace a CTBT, the Department was forced to embark on a costly new program known as Science-Based Stockpile Stewardship and Management. Under this program, DOE plans to develop new machines and processes that can substitute for nuclear testing and thereby provide surrogate assurance that our nuclear weapons are safe and will work as advertised.

While I support an effort to modernize the production infrastructure and improved diagnostic capabilities at the labs, we must recognize that few of these machines and processes exist today. Many will not be available for another decade or longer. I liken this approach to a cosmic role of the dice with the linchpin of U.S. national security, our nuclear forces, hanging in the balance.

Third, and perhaps most disappointing, is the fact that the Clinton administration has failed to support its own stewardship and management program. It is difficult to find evidence of the administration's commitment to implement the program, and it is easy to find evidence of erosion of that commitment under pressure from the antinuclear community, and I give these examples.

The administration committed to a 6-month underground test readiness posture but never followed through on it. It was originally committed to conducting low-yield hydronuclear experiments, then folded. It then committed to conducting subcritical experiments at the Nevada test site, but has now delayed these tests twice in 3 months. It woefully underfunded the Defense programs account in its budget request for fiscal years 1996–97 and has

failed to resolve a projected shortfall of \$4.5 billion for fiscal years 1997 to 2002 that will preclude DOE from meeting its programmatic commitments.

The administration promised to resume nuclear testing if another nation tested. But after China, France, and Russia tested, it did nothing. It repeatedly delayed a final decision on the future size and character of the complex knowing full well that continued uncertainty over mission assignments would exacerbate tensions between the laboratories and the plants when, in fact, both are needed to ensure a viable complex. It has not budgeted funds to recapitalize the infrastructure at the nuclear production plants and has diverted funds added by Congress for this purpose to other programs and activities.

It has not provided a definitive plan for how the United States will produce tritium, nor has it allocated sufficient resources to carry out an accelerated program. It has done little or nothing to halt the hemorrhaging of skilled personnel from the U.S. nuclear establishment. Congress established fellowship programs to address this problem, but the Department has refused to obligate the funds.

It has not conducted all the tests it believes are necessary to ensure the reliability of the stockpile, with tests for some types of weapons far behind schedule, as noted in a recent critical report issued by General Accounting Office [GAO], and it failed to respond to the committee's request for a list of permitted and prohibited activities under a comprehensive test ban treaty. As a result, we don't know whether the funds we have authorized can be spent without violating the treaty or whether other nations that are party to the treaty share our interpretation of what is allowable under the treaty.

Given this record, I expect the members of this committee will wish to carefully consider in the context of next year's debate on the budget resolution and the Defense Authorization Act whether DOE is fulfilling its responsibilities and whether some other entity, be it an independent agency or the Department of Defense, would better perform this mission. So having laid out those challenges, Mr. Curtis and Dr. Reis and General Joersz, we look forward to your testimony, but let me first yield to my good colleague, the ranking member, the gentleman from Missouri, Mr. Skelton, for any remarks he might want to make.

[The prepared statement of Mr. Hunter follows:]

STATEMENT OF CHAIRMAN DUNCAN HUNTER
MILITARY PROCUREMENT SUBCOMMITTEE
OVERSIGHT HEARING ON THE DEPARTMENT OF ENERGY
SEPTEMBER 19, 1996

The Military Procurement Subcommittee meets today to continue its oversight of Department of Energy (DOE) plans, programs, and policies. The House National Security Committee has budgetary jurisdiction for well over half of DOE budget. Continued, aggressive oversight of DOE is needed in light of the obvious stakes involved and because of concerns that DOE is failing to fulfill its obligations as steward of the Nation's nuclear stockpile and complex.

My colleagues should be aware that the Subcommittee extended the invitation to testify today to Energy Secretary Hazel O'Leary, but the Secretary declined and directed her deputy, Mr. Charles Curtis who is before us today, to come instead. I understand that the Secretary has legitimate commitments that require her presence overseas. Nonetheless, I fear that the Secretary's inability to make herself available to discuss matters related to nuclear weapons stewardship and the nuclear weapons complex is emblematic of a much broader problem.

The question before us today is, *Is the Department fulfilling its commitment to the President and to the American people to ensure that America's nuclear stockpile is safe, secure and reliable in the coming decades?*

Based on the evidence to date, I believe any impartial observer would be forced to conclude that the answer is "No", the Department has abdicated its leadership role in this vital area. This is not a direct criticism of you, Mr. Curtis, because I know you are struggling mightily to focus attention on these matters within the Department. In fact, without your perseverance and managerial expertise, I suspect the situation would be much worse than it is now.

Instead, I level this criticism at the Clinton Administration as a whole, which has given our weapons scientists and engineers and skilled laborers what I consider to be a "Mission Impossible": maintaining a safe and reliable nuclear stockpile in the absence of nuclear testing.

The mismatch between the Administration's rhetoric and its actual deeds is profound and growing. On the one hand, Administration officials have testified that a modern, capable nuclear complex, staffed by motivated, skilled scientists, engineers, and laborers, is imperative if we are to retain safe, secure, and reliable nuclear weapons. On the other hand, the Administration has failed to take actions to sustain—much less modernize—the complex, and has ushered in a period of low morale amid a potentially devastating out-flow of skilled personnel at the laboratories and the production plants.

Let me cite some examples:

First, the Clinton Administration rejected the sound advice of experts, including experts from the weapons laboratories and the Department of Defense who argued in favor of the only tried-and-true approach to assuring nuclear competence--nuclear testing--in exchange for the prospect of an international agreement banning all nuclear tests. Yet, the arguments against the recently-concluded Comprehensive Test Ban Treaty are overwhelmingly convincing. For example, the accord is not effectively verifiable, and it will do nothing to prevent non-signatory nuclear wannabe's from achieving a nuclear capability.

Think about it: North Korea achieved a nuclear capability without conducting a test, and Iraq never tested but was within months of producing a nuclear bomb. A CTBT will, however, prohibit the U.S. from undertaking a limited nuclear test program, even if such tests are intended to fix a safety problem on a given weapon design.

Second, with the President's decision to embrace a CTBT, the Department was forced to embark on a costly, new program known as "Science-Based Stockpile Stewardship and Management." Under this program, DOE plans to develop expensive, new facilities and rely extensively on modeling processes as a surrogate for nuclear testing in order to provide assurance that our nuclear weapons are safe and will perform as advertised. While I support an effort to modernize the production infrastructure and improve diagnostic capabilities at the labs, we must recognize that few of these machines and processes exist today; many will not be available for another decade or longer.

I liken this approach to a "cosmic roll of the dice"—with the linchpin of U.S. national security, the maintenance of a safe and reliable U.S. nuclear deterrence, hanging in the balance.

Third, and perhaps most disappointing, is the fact that the Clinton Administration has failed to support for its own Stewardship and Management program. It is difficult to find evidence of the Administration's commitment to implement the program, and it's easy to find evidence of erosion of that commitment under pressure from the anti-nuclear community. For example:

- ◆ It committed to a six-month underground nuclear "test readiness" posture but never followed through on it.
- ◆ It was originally committed to conducting low-yield, "hydronuclear" experiments, then folded.
- ◆ It then committed to conducting "subcritical experiments" at the Nevada Test Site but has now delayed those tests twice in three months.
- ◆ It woefully under-funded the "Defense Programs" account in its budget requests for fiscal years 1996 and 1997, and has failed to resolve a projected shortfall of \$4.5 billion from fiscal years 1997-2002 that will preclude DOE from meeting its programmatic commitments.

- ◆ It promised to resume nuclear testing if another nation tested, but after China, France, and Russia tested, it did nothing.
- ◆ It repeatedly delayed a final decision on the future size and character of the complex, knowing full well that continued uncertainty over mission-assignments would exacerbate tensions between the laboratories and the plants, when in fact both are needed to ensure a viable complex.
- ◆ It has not budgeted funds to recapitalize the infrastructure at the nuclear production plants, and has diverted funds added by Congress for this purpose to other programs and activities.
- ◆ It has not provided a definitive plan for how the U.S. will produce tritium, nor has it allocated sufficient resources to carry out an accelerated program.
- ◆ It has done little or nothing to halt the hemorrhaging of skilled personnel from the U.S. nuclear establishment. Congress established fellowship programs to address this problem but the Department has refused to obligate the funds.
- ◆ It has not conducted all the tests it believes are necessary to ensure the reliability of the stockpile, with tests for some types of weapons far behind schedule, as noted in a recent, critical report issued by the General Accounting Office.

and

- ◆ It failed to respond to the Committee's request for a list of permitted and prohibited activities under a Comprehensive Test Ban Treaty. As a result we don't know whether the funds we have authorized can be spent without violating the Treaty, or whether other nations that are party to the Treaty share our interpretation of what is allowable under the Treaty.

I find this an astonishingly dismal record of performance—one which calls into question this Administration's stated commitment to assuring the safety and security of our nuclear weapons.

Given this record, I expect the Members of this Committee will wish to carefully consider, in the context of next year's debate on the budget resolution and the Defense authorization act, whether DOE is fulfilling its responsibilities and whether some other entity—be it an independent agency or the Department of Defense—would better perform this mission.

With us this morning to discuss these important matters are:

Mr. Charles B. Curtis
Deputy Secretary of Energy

Dr. Vic Reis
Assistant Secretary of Energy
(Defense Programs)

and

Major General Al Joersz
Principal Deputy Assistant Secretary
for Military Application

**STATEMENT OF HON. IKE SKELTON, A REPRESENTATIVE
FROM MISSOURI, RANKING MINORITY MEMBER, MILITARY
PROCUREMENT SUBCOMMITTEE**

Mr. SKELTON. Thank you, Mr. Chairman. I join you, Mr. Chairman, in welcoming our witness, Deputy Energy Secretary Charles Curtis. I look forward to hearing from him regarding the important issues facing the Department as it meets the challenges of assuring the reliability of our nuclear weapons during an era of nonweapons testing. A question has been raised about surveillance of the stockpile, whether the science-based approach to stewardship is sufficient, whether we will have tritium on time, and whether we are ensuring a sufficient production capability, among other things, and I think this is the proper method of oversight to do surveillance of these three issues.

Others, Mr. Chairman, have expressed concerns regarding the relationship between our Nation's arms control and its stewardship strategies. I hope that answers to these and other questions will be provided during this testimony, and I welcome Mr. Curtis, General Joersz, and Dr. Reis and thank you.

Mr. HUNTER. I thank the gentleman, and we are privileged to have the ranking member of the full committee with us today. He has attended many of what we have called or classified as our marathon sessions, especially on DOE, but does my friend from California, Mr. Dellums, wish to make any statement?

**STATEMENT OF HON. RONALD V. DELLUMS, A REPRESENTATIVE
FROM CALIFORNIA, RANKING MINORITY MEMBER,
COMMITTEE ON NATIONAL SECURITY**

Mr. DELLUMS. Just very briefly, Mr. Chairman, and I hope you accept this in the manner that I choose to convey it. It seems to me there are two ways to engage in oversight responsibility, which is clearly ours. And that is to have policy-oriented concerns, issue-oriented concerns, and lay those concerns out and say to the administration legitimately here are concerns. These are legitimate issues that we lay on the table, and within the framework of our oversight responsibility, we ask you to respond; let us engage each other on these substantive issues. That is one way to do it. And I would like to think on my worst day that is the way I try to do it. I started out as a chairman of a subcommittee during the Reagan era, an administration with which I had great policy differences, but on my worst day I never charged them sitting in the chair. What I said was here are issues; let us talk. Gave them ample opportunity to lay their case on the table in an atmosphere of openness and fairness and mutual exchange.

I listened very carefully to your opening remarks, and over and over again rather than simply laying out substantive, complex, significant issues, it was this administration which did this, and you came, if you read your remarks again, you came to some flatout conclusions that I think frame these hearings in a manner that I have some trouble with. I simply lay that on the table for you. My hope would be that we would approach these hearings in the former as opposed to the latter because I think at the point where you made flatout, bottom line, it makes for a simple media reporting, but it does not address the reality of the charge and respon-

sibility that we have here, and I am a little chagrined at how we choose to go down that road, particularly in this obvious political atmosphere. I would like to think that when we come inside this room and close the door, it is not about politics, it is about policy and about ideas and what is in the best interest of our people, and I think that we should put these political accusations down and enter into that kind of open discussion. I lay that on the table because I think that ought to be part of the record. Thank you for your generosity. I yield back my time.

Mr. HUNTER. I thank my friend, and I will just answer to my friend that these conclusions starting with the administration committing to underground nuclear test readiness but not following through, going to hydronuclear experiments, then not following through, are simply the world and the record as I see it, and I think we have 11 concerns there that we have laid out in that list any that I have just described, and I know that our witnesses will amplify on the issues and have a chance to address those.

We do appreciate our witnesses being with us this good morning, and it is in the best spirit of give and take that we welcome you, and I thank the gentleman for his statement. We also are privileged to have the chairman of the full committee, Mr. Spence, with us, and, Mr. Spence, do you have any statement you would like to make?

The CHAIRMAN. No, I just want to welcome our witnesses this morning. Thank you for being here.

Mr. HUNTER. OK. Thank you. Gentlemen, thank you for being with us this morning, and Mr. Curtis, as always, I know you are well prepared, and the floor is yours.

STATEMENT OF CHARLES B. CURTIS, DEPUTY SECRETARY OF ENERGY, ACCOMPANIED BY DR. VIC REIS, ASSISTANT SECRETARY OF ENERGY FOR DEFENSE PROGRAMS, AND MAJ. GEN. AL JOERSZ, PRINCIPAL DEPUTY ASSISTANT SECRETARY FOR MILITARY APPLICATION

Mr. CURTIS. Thank you, Mr. Chairman. I am pleased to come before the committee to talk about the Department's discharge of its national security responsibilities. I have a prepared statement, and with your permission, Mr. Chairman, I would like to submit that for the record. I also think, Mr. Chairman, that it would be useful if we might reserve the record so that if we do not in the give and take of these answers have the opportunity to respond fully and completely to your opening statement, we may submit a response to the opening statement for the record.

Mr. HUNTER. Without objection.

Mr. CURTIS. Mr. Chairman, and members of the committee, I believe the Department has made good progress since I last appeared before this committee to discuss our fiscal year 1997 budget request. Some of these activities, such as the completion of the stockpile program plan, known as the Green Book, you are already familiar with. Other progress, such as our work on new tritium supply, the advances in our computational capability, are significant and deserve your attention.

Each of our program activities, I want to recall for this committee, is closely coordinated with the Department of Defense and

closely monitored by the Nuclear Weapons Council chaired by Defense Undersecretary Kaminski. We have worked hard, and I believe we have accomplished much since I last appeared before you. I believe, Mr. Chairman, that a number of the conclusions offered in your opening statement are not correct, and I welcome the opportunity in this hearing to offer a view that we hope will clarify the record on those matters.

As you know, our administration believes the Comprehensive Test Ban Treaty, expected to be signed next Tuesday in New York, will have profound and long-term positive effects on world safety and security. Nuclear deterrence, as the President has stated, remains the cornerstone of this Nation's defense strategy. The Department of Energy and the national laboratories are working hard to ensure that the stockpile remains safe and reliable to provide this deterrence. DOE in partnership with the Department of Defense is committed to maintaining an effective nuclear deterrent while working to reduce the worldwide threat associated with these and other weapons of mass destruction.

The Stockpile Stewardship Management Program is the key to maintaining the stockpile for the long term. The Stockpile Stewardship Program, I am pleased to report, has truly turned the corner this year. It is no longer simply a concept. In April, the Department of Energy and the Department of Defense completed the road map for the day-to-day business of assuring the safety and reliability of the stockpile. The classified Green Book, copies of which have been provided to Congress, will enable the Department of Defense and Energy to complete the new certification process in a timely manner, identify and implement life extension modification, and establish a mechanism for predicting problems before they happen.

The first annual certification process is almost complete. The lab directors and the commander of the U.S. strategic command have completed their reviews and provided their recommendations to the Secretaries of Defense and Energy. The Nuclear Weapons Council will complete its review shortly. We expect to complete the process in October. The review process will be a thorough evaluation and assessment of the integrity of the stockpile. It will provide you and the Congress the confidence that you need and provide by process a certification to the President that these responsibilities are being effectively discharged.

When I last appeared before you, I announced the creation of the Tritium Management Board, which is a senior Department of Energy executive board, which I chair, and the appointment of General Joersz as the director of the tritium project office. Today, I am pleased to report that General Joersz is keeping the program well on track, and the management board has proved to be an effective tool to focus the resources of the Department on this high priority program.

Since announcing the dual track approach last summer and completing the environmental impact statement for tritium production in December, considerable activity has taken place in the tritium office. The accelerator program recently announced the selection of Burns and Roe, together with General Atomics, to be its industrial partner. Under this new contractual arrangement, Burns and Roe will be responsible for designing the Accelerator Production of

Tritium [APT] plant. If the accelerator is selected as the new production technology, Burns and Roe will proceed with APT plant construction and commissioning at Savannah River.

On the research and development front, Los Alamos is currently operating the front-end portion of the accelerator, the injector, at design levels with required reliability. In 1997, the conceptual design for the accelerator and a full assessment of baseline costs will be completed. In addition, fabrication of one of the critical new accelerator components, the klystrode, will be completed. This new klystrode design could increase the electrical efficiency of the accelerator by as much as 20 percent.

Turning to the light water reactor path, the light water reactor has also made significant advances over the past few months. And integrated project team has been formed calling upon the resources of the key DOE reactor facilities, the Idaho National Engineering Laboratory, the Pacific Northwest National Laboratories, Savannah River site, and Sandia National Laboratory. This team ensures full usage of all the relevant DOE assets. The technical uncertainties of tritium production in a light water reactor are minimal, but there is real potential for significant regulatory and institutional challenges. To further resolve these issues, DOE and the Nuclear Regulatory Commission have signed a memorandum of understanding. Pursuant to this agreement, a regulatory road map is being drawn to identify and resolve regulatory issues associated with the use of the Nuclear Regulatory Commission [NRC] licensed light water reactors.

Finally, DOE has initiated the process to allow for inreactor testing of tritium targets in commercial reactors by late 1997 or early 1998. I should point out that testing in reactors not only serves the path of a commercial light water reactor for new tritium source, it also serves the contingency plan to utilize light water reactors if a national security emergency should present itself sometime in the future.

Mr. Chairman, we have heard repeatedly concerns raised about whether the Department has decided on a tritium path to meet the requirements for the nuclear deterrent. We have decided on a dual path approach to this problem, a dual path that has been supported by the Department of Defense, approved by the Nuclear Weapons Council, and I would suggest to you approved by the Congress in the last 2 years in its appropriations acts and in its authorization acts. So I must tell you I am somewhat confused by the continued uncertainty about the matter.

Last fall a concept for tritium production using the FFTF was presented to the Department of Energy and after several internal reviews of the tritium production capability of FFTF were completed, Secretary O'Leary directed an independent study by undertaken, a study that has been conducted by the JASON's and will soon be reported to the tritium board, which I chair, and, of course, that will be available to the committee at its request.

Now let me turn to the production complex and the stockpile stewardship and management programmatic environmental statement, which paces our implementation of putting in place the physical assets of the stockpile stewardship and management plan. Over the past several years, there has been concern that the Stock-

pile Stewardship Program favored or focused on the laboratories to the detriment of the production complex. While the labs have undoubtedly had a more visible role, these two elements of the complex, production facilities, and laboratories, are equally important to the success of the Stockpile Stewardship Program. I believe that this concern has abated and the labs and the production sites have developed a new and even closer working relationship. This close, coordinated relationship and the responsibility of the various portions of the weapons complex of the future are the subjects of the stockpile stewardship and management program environmental impact statement.

This document was published in draft form for comment in February, and the Department received many comments on the EIS and has been in the process of reviewing, addressing, and responding to these comments. I am pleased to report the process is complete and the final EIS should be printed and available for release in the very near future. Following that release, a record of decision, as you know, under law can be issued 30 days thereafter. The Department's preferred alternative is to downsize the production complex in place and not to close any of the production sites. The size and capacity of the production complex will be sufficient to meet the lead and hedge requirements set out by the Department of Defense's Nuclear Posture Review or incorporated in the Nuclear Weapons Stockpile Memorandum.

The programmatic environmental impact statement also addresses the future capabilities of the laboratories and identifies new tools needed to help improve the science base. I suggest when this record of decision is made, the committee may wish to reconvene and conduct a hearing on the matter because we will then have a fully charted out plan for the committee's decision.

The three elements of stockpile stewardship and management are the Stockpile Life Extension Program, the Enhanced Surveillance Program, and the Annual Certification Process. The Enhanced Surveillance Program provides the research, development, and tools to enable accurate prediction of problems before they arise. It links together the advanced scientific and computational capabilities with the day-to-day needs of maintaining the stockpile. With the knowledge gained from the Enhanced Surveillance Program, DOE can establish in conjunction with the Department of Defense the Life Extension Program. This program establishes detailed schedules for specific weapons maintenance and refurbishment. Department of Energy [DOE] and Department of Defense [DOD] have adopted the philosophy that all components of a nuclear weapon are limited-life components.

Annual certification is the annual review process to ensure the elements of the stockpile stewardship are performing and that the stockpile remains safe, secure, and reliable. As I mentioned earlier, the first annual review process should be completed next month.

In my formal statement, I address our initiatives to advance our super-computing capability, our Nevada test site readiness, and the budgetary outlook for the next 10 years. Let me comment specifically on that because I know it is a matter of concern to this committee. It is a matter of concern to the Department. We have just begun the budgetary process for 1998. The administration and the

Department are committed to request funding adequate to maintain the President's commitment to the long-term success of the Stockpile Stewardship Program. To maintain the aggressive program on which the DOE has embarked will take continued bipartisan support to maintain the \$4 billion annual funding level in times of ever-increasing downsize pressures. That is an average \$4 billion annual funding level that would be required over the next 10 years. It is going to be hard to do, but it needs to be done. I look forward to working with this committee to achieve the necessary support.

I must comment in passing, Mr. Chairman, with respect to the concerns about under-funding this program. I want to point out two things. First, if you were to design a program in the post-cold war period that contemplates that some period in the future the political process may take away the capacity to conduct tests, even if you were to start out at this date providing for the stewardship for the stockpile with a test regime, you would have to plan a program that would presume that test capability would be denied you sometime in the next 10 to 20 years. You would design a program not much different than the program that we have presented to provide for the nuclear deterrent in the absence of testing.

I think Dr. Regis may comment on this further, but we have had several occasions to discuss this on the Senate side and we would like to have the opportunity to elaborate on it because even if you were to conclude to provide for testing, you would still design the same program that we have provided to allow for our maintenance of the stewardship responsibility in the absence of testing.

Second, with respect to under-funding, as we all know, this is a difficult process in these fiscal times, and it is somewhat worth noting that the House this year provided less than the Department requested for these programs. Fortunately, the conference concluded to provide a more appropriate amount to the discharge of these duties.

Mr. Chairman, the ongoing questions that the Department of Energy must always be prepared to answer are: can the DOE in the absence of nuclear weapons testing continue to ensure the safety and reliability of the stockpile; are our scientific and technical capabilities up to the task; and will they confidently be so in the future? We know we have the burden of that demonstration. We know that Mr. Skelton from Missouri is from the "show me" State, and we know that is our responsibility to show him and this committee, and we are happy to have the opportunity to do so. We look forward to your questions.

[The prepared statement of Mr. Curtis follows:]

STATEMENT OF CHARLES B. CURTIS
DEPUTY SECRETARY OF ENERGY
U.S. Department of Energy

Before the House National Security Committee
Subcommittee on Military Procurement
September 19, 1996

INTRODUCTION

Good morning Mr. Chairman and members of the subcommittee. Thank you for providing the opportunity to appear today to discuss the national security activities of the DOE, in particular Defense Programs.

The United States security environment demands continuing flexibility on the part of the Department to meet a new set of circumstances. The cessation of underground nuclear weapons testing; the President's commitment to sign a zero yield Comprehensive Test Ban Treaty with the necessary safeguards; U.S. ratification of the START II treaty, and a determination that existing weapons can provide this nation's deterrent into the future, while maintaining our nuclear competence and capability, are circumstances that have dramatically redefined the mission of the Department of Energy, Defense Programs to Stockpile Stewardship and Management. The Department, with the help of the Congress, has made significant progress in this critical national security program over the last several months.

DEFENSE PROGRAMS OBJECTIVE AND ACCOMPLISHMENTS

In March, I discussed with this subcommittee the challenging responsibility facing the DOE to ensure the safety, security, and reliability of the enduring nuclear weapons stockpile in the absence of both testing, and any requirement to produce new weapons. Since then, the Department has, in conjunction with the DoD, completed the Stockpile Stewardship and Management Program (SSMP) plan, to meet these challenges. We provided a copy of this classified plan, known as the "Green Book" to the Congress in April. We are continuing to work closely with the DoD to refine and implement this plan to meet fully the requirements of the President's Nuclear Weapons Stockpile Plan. The Green Book will be revised annually and made available to the Congress in the spring.

The Department's objective is to implement a program that:

Supports the U.S. nuclear deterrent with a safe, secure, and reliable nuclear weapons stockpile as the weapons complex is modernized and made more efficient. This complex, along with the implementation of the Stockpile Life Extension Program, will allow DOE to meet, economically and

expeditiously, all requirements and contingencies identified by the Nuclear Weapons Council;

Preserves the core intellectual and technical competencies of the weapons laboratories and the manufacturing facilities. Without nuclear testing, confidence in the U.S. nuclear deterrent will be dependent upon the competency of the people who make the scientific and technical judgments related to safety and reliability of U.S. nuclear weapons and those who must make the weapons and weapons components when needed. The SSMP will be a single, integrated technical program designed to ensure the continued safety and reliability of the nuclear weapons stockpile. The SSMP will seek advances in the understanding of the physics, chemistry, and material issues and provide the infrastructure deemed essential to maintain the safety, reliability, and performance of nuclear weapons, including fabrication of replacement parts. The SSMP will allow early detection and repair of problems that may arise with the stockpile and ensure that new people brought into the complex continue to have the capability to make competent technical judgments concerning nuclear weapons in the future;

Ensures the activities needed to maintain the nation's nuclear deterrent are coordinated and compatible with the nation's arms-control and nonproliferation objectives, including the recently U.N. endorsed CTBT.

The Stockpile Stewardship and Management Program will continue to transform the nuclear weapons complex, maintain all existing capabilities, reestablish tritium and pit production capabilities, and assure an adequate manufacturing capacity to support a smaller, aging stockpile. The future complex will rely more on scientific understanding, computer simulations, above ground experiments, computer aided design, and manufacturing agility rather than underground test empiricism and Cold War level manufacturing capacity. Work with private industry through technology partnering can combine our limited resources with industry capabilities to assist us with advanced manufacturing methods, improved materials development, and high speed, integrated computing and communication systems.

Stockpile Stewardship and Management Programmatic Environmental Impact Statement

On February 28, 1996, the Department issued the Draft Stockpile Stewardship and Management Programmatic Environmental Impact Statement (PEIS) that, when finalized, will form the basis for the Department's transition to the capability-based complex of the future. The PEIS covers the future capabilities required of the three weapons laboratories (Los Alamos, Sandia and Lawrence

Livermore) the four industrial plants (Kansas City, Pantex, Savannah River, and Oak Ridge Y-12) and the Nevada Test Site.

The Department's preferred alternative for stockpile stewardship proposes construction and operation of the National Ignition Facility and the Contained Firing Facility addition to the Flash X-Ray Facility at the Lawrence Livermore National Laboratory, and the Atlas Facility at the Los Alamos National Laboratory. All three facilities examine different aspects of weapons physics, the key to understanding weapon safety and reliability. The Dual Axis Radiographic Hydrodynamic Test Facility (DARHT), at Los Alamos National Laboratory, is another key facility supporting the stockpile stewardship program, that is proceeding ahead of the PEIS. An Environmental Impact Statement has been completed on DARHT and an independently justified Record of Decision has been made. Construction is now underway and the first axis of DARHT is scheduled for completion in 1999.

The Department's preferred alternative for stockpile management proposes to downsize in-place the following activities: weapons assembly/disassembly and high explosive fabrication at Pantex, nonnuclear component fabrication at the Kansas City plant, and secondary and case component fabrication at Oak Ridge Y-12. Pit component fabrication is to be reestablished with a small production capacity at Los Alamos. Based on pit surveillance data and stockpile requirements, the Department believes that this will be adequate. The Department will develop a plan for larger scale pit production capacity if it should be needed at a later time.

The Department has received a large number of comments on the Draft PEIS. I would like to address two specific congressional concerns on the Draft PEIS: (1) that it does not adequately deal with the production capacity that will be needed to maintain the stockpile over the next 10 or more years; and (2) that it is based on overly optimistic assumptions about arms control agreements.

The preferred alternatives described in the Draft PEIS will preserve the critical capacity and unique assets that exist in the Department's production plants. Although there would be downsizing of the production plants commensurate with a downsized stockpile, none of the plants would be closed. The Draft PEIS addresses a range of stockpile sizes consistent with DoD plans as reflected in the Nuclear Posture Review and the Nuclear Weapons Stockpile Memorandum. The Department's use of the additional \$106 million in the FY 1996 Energy and Water Development Act, P.L. 104-46 and the Production Capability Assurance Program (PCAP) should reinforce to the Congress our commitment to maintaining the production complex.

The PEIS reflects the Department's realistic and pragmatic approach in anticipating future arms control agreements. The stockpile has already been significantly reduced through dismantlement afforded by START I. Post Cold War dismantlement to the START I sized stockpile level directed by the 1996 Nuclear Weapons Stockpile Memorandum is more than 70 percent complete and the balance should be done within the next few years. Thus, while some downsizing of facility infrastructure seems reasonable given the smaller stockpile, the downsizing is planned to be gradual (1998-2005) and therefore flexible to meet changing world circumstances. This approach supports fully the DoD lead but hedge strategy.

The Department has completed an extensive series of public hearings on the PEIS at all the affected sites and in Washington, D. C. The comment period closed on May 8, 1996. The Department expects to issue the final Environmental Impact Statement in October and a Record of Decision in November 1996.

Stockpile Life Extension Program (SLEP)

The mission of the SLEP is to sustain the current nuclear weapons stockpile while maintaining a high level of confidence in the stockpile without underground nuclear testing. The SLEP serves as the operational basis for the *Stockpile Stewardship and Management Program Plan*, establishes the requirements to meet nuclear weapon stockpile commitments to DoD, and provides the basis for coordinating stockpile activities between DOE and DoD. It will build on and enhance past practices to maintain a viable nuclear weapons stockpile. The SLEP will be closely coordinated with DoD. Detailed schedules for specific weapon activities will be developed through individual weapon Project Officer Groups.

The underpinning concept for the SLEP is "all components of a nuclear weapon are limited life components." The SLEP will focus and prioritize the efforts of the weapons complex. The Enhanced Surveillance program will provide data to understand better material and component aging phenomena and determine the limit of components and materials. This will provide the needed information to determine a life extension program and sustain a safe, reliable stockpile meeting DoD performance requirements.

The SLEP integrates stockpile management activities and establishes requirements and priorities to support budget and workload planning. These activities to support the stockpile are embodied in four key functions: maintenance, surveillance, assessment and certification, and refurbishment. The underpinning activities for these functions are based on science and modeling based capabilities and our capability to manufacture a reliable product.

Ongoing activities include support for DoD requirements, established by the NWC, the B61-3/4/10 Use Control upgrades, the B83-1 Quality Improvement Program, the W87 Life Extension Program, the W88 pit rebuild program, the manufacturing of tritium bottles for the W62 and W78 warheads, and support for resumption of Enriched Uranium Operations at the Y-12 Plant.

Enhanced Surveillance

Enhanced Surveillance is a new and important research and development program that will enable us to predict when problems will arise in the stockpile. It is a complex-wide integrated program involving the four production plants and the three weapons laboratories. It is the one program that links together the advanced science capabilities inherent in stockpile stewardship with the day-to-day needs of supporting the weapons in the stockpile.

Enhanced Surveillance focuses on three major areas: 1) materials science, 2) materials aging model development, and 3) testing and monitoring technologies. This program is developing models which account for aging effects in weapons materials, components, and systems that help us to predict service lifetimes and to schedule (with the DoD) necessary component replacement. This may have the effect of making all weapons components subject to replacement at regular intervals. The advanced diagnostic and testing techniques developed in this program will collect information that not only supports our model development, but advances our knowledge of the behavior of these complicated materials and components over time.

The surveillance techniques, procedures, and models developed in this program will be incorporated into the ongoing core surveillance program when we are confident of their validity. With these new tools, our program of stockpile surveillance will emphasize prediction and preventative maintenance.

The Enhanced Surveillance Program Plan has been developed and research and development was initiated in March 1996. Specific activities that are now underway include: studies for advanced diagnostics of materials and components, establishing a priority structure for component/subsystem aging model development, and failure mode analysis for materials aging.

In FY 1997 the Enhanced Surveillance Program will: develop methods for fabricating diagnostic prototypes, complete the initial set of material models and begin experiments for validation, begin development of firing system and surety system models, define initial integrated sensor package for in-weapon monitoring, and complete micro-structure assessment of high explosives in the stockpile.

Annual Certification

A primary DOE responsibility is to certify the safety and reliability of the nation's nuclear stockpile. As a result of the President's August 11, 1995, announcement to seek a zero yield CTBT, the Secretaries of DoD and DOE have put in place an annual certification process requiring the considered advice of the Nuclear Weapons Council, the Commander of the U.S. Strategic Command, and the Directors of DOE's Nuclear Weapons Laboratories, on whether the stockpile is safe and reliable in the absence of nuclear testing.

All active and inactive weapon types have been assessed by the weapons design laboratories and the DoD-led joint Project Officers Group. The laboratory directors and the Commander of U.S. Strategic Command have provided their advice to the Secretaries of Energy and Defense. We expect the first annual certification to be completed in October 1996. All indications are that the stockpile remains safe, secure, and reliable. It is important to note safety and reliability issues are continually assessed by the DOE.

Tritium

An integral part of ensuring confidence in the stockpile is providing an adequate supply of tritium, a radioactive gas required for all U.S. nuclear weapons to operate as designed. Tritium, with a half life of 12.3 years, decays at a rate of 5.5 percent per annum. To meet current stockpile requirements, the Department is recycling tritium from dismantled weapons. According to the Nuclear Weapons Stockpile Memorandum (NWSM) signed by the President, March 11, 1996, a new tritium production source may be needed as early as 2005 to maintain the START I stockpile, and the associated 5-year tritium reserve, until full ratification and entry into force of the START II Agreement.

Last year, the Department embarked upon a dual track strategy for developing a reliable source of tritium to meet national security requirements. One track will investigate the purchase of a commercial reactor or irradiation services. The other track will develop and test accelerator production of tritium. We are also continuing to study a possible role in tritium production for the Department's FFTF reactor.

We have established a Tritium Program office under the Assistant Secretary for Defense Programs and within it two offices to develop the two tracks. The stated goal of that office is to present to the Secretary two feasible means of producing tritium with the costs well defined. By the end of 1998, the Department, in consultation with the DoD, will select one of these alternatives as the primary tritium production method. The other, will become an assured backup capability. To ensure the

highest priority is given to this program, the Secretary created, and I chair, a senior departmental body, the Tritium Management Board to oversee the work of the office and the two tracks.

There are no serious technical issues associated with the production of tritium in a light water reactor, but there are regulatory and licensing uncertainties. Tritium producing targets for use in light water reactors were developed and tested several years ago. While additional target qualification studies are needed to support regulatory and owner approval for their use in commercial reactors, the work already accomplished has demonstrated that the target will work extremely well in light water reactors.

In early 1996, the Department invited expressions of interest from electric utility companies owning commercial nuclear facilities to determine their preliminary level of interest in either selling a reactor or irradiation services to the Department for tritium production. The response to that invitation has been very encouraging, and we are now developing a formal solicitation of proposals for the sale of facilities or services to the Department to make tritium. The Department and the Nuclear Regulatory Commission (NRC) signed a Memorandum of Understanding in May governing the interaction between the two agencies for target qualification and NRC reactor licensing activities.

Planned technical activities in FY 1997 for the commercial reactor approach will include target fabrication demonstrations to support target procurement, extraction process development to support conceptual design and construction of a tritium extraction facility at Savannah River. In addition, in FY 1997 the Department will issue a Request for Proposals (RFP) for the purchase of one or more light water reactors or irradiation services, and evaluate these proposals.

With regard to the accelerator alternative, there are several features and portions of the technology that need to be demonstrated at production power levels and the costs need to be better defined. The exploration of the accelerator concept includes a development effort to select between technical alternatives, testing to establish performance and reliability, and the use of industry for conceptual and engineering design and, if built, construction and commissioning. These efforts will narrow the design, cost and schedule uncertainties.

Los Alamos National Laboratory is carrying out the development activities, and they are well under way. We have just selected Burns and Roe Enterprises, Inc. and General Atomics as our industry team to design and build the plant. The Savannah River Site will be the location of the accelerator if a decision is made to proceed with construction. The Westinghouse Savannah

River Corporation, or its successor, will operate the plant should it be built.

In FY 1997 the accelerator team will focus on developmental engineering and component qualification to establish baseline design of the accelerator components. Materials tests have already begun at Los Alamos for the "target" section of the plant, where the tritium is actually made by the accelerated protons. The first parts of an engineering model of the early portion of the proton accelerator are being built, and the first is operating at or better than the design specifications. Early next year the team will complete a Conceptual Design Report (CDR) for the APT production facility, which will establish baseline design and greatly narrow the cost uncertainty. This report would also provide a basis for requesting approval to begin engineering design in FY 1998.

Earlier this year the Secretary requested that a study to examine the feasibility of using the FFTF to produce tritium be conducted. The Tritium Management Board requested that the JASONS provide an independent review the technical issues associated with the use of the FFTF. A decision by DOE on the FFTF is expected by the end of the year.

Accelerated Strategic Computing Initiative (ASCI)

ASCI is designed to accelerate the development of nuclear weapons simulation codes, scientific understanding of weapon behavior, advanced computer platforms, and computing environments and infrastructure. These advances are essential for addressing the challenge of using simulations for investigating performance, safety, and reliability of weapons in the nuclear stockpile.

In FY 1996, ASCI began work on 11 entirely new codes, including four 3-D full physics codes that will directly increase the ability of laboratories to predict the integrated performance and safety of weapons through computational means. In December 1996 the world's fastest computer will be delivered to Sandia National Laboratories. This computer will run at more than one trillion operations per second and will be dedicated to solving difficult weapons problems.

DOE has entered into an agreement with IBM for the next generation computer. On July 26, 1996, the President announced the award of a contract for a computer to be delivered to the Lawrence Livermore National Laboratory in 1998 that will be capable of three trillion operations per second. More computers will follow, on a development path toward a goal of 100 trillion operations per second.

To link these new computers to laboratory researchers, the first secure high-speed data network linking the Los Alamos, Sandia,

and Lawrence Livermore National Laboratories was established on October 20, 1995. These are only the first of a series of advances in computational capability that will provide another essential tool needed to maintain confidence in our nuclear stockpile through simulation.

The ASCI program will continue to advance during FY 1997. Significant efforts will be required to continue the development of the codes started in FY 1996. The development of these codes includes the delivery of the initial capabilities required to certify planned near-term stockpile modifications. The development of these codes also requires a significant integration with Defense Programs experimental facilities for verification and validation. Advanced modeling, software, and infrastructure work will be required to enable weapons code development and simulation on those computers.

National Ignition Facility

The proposed National Ignition Facility (NIF) is designed to produce, for the first time in a laboratory setting, conditions of temperature and density of matter close to those that occur in the detonation of nuclear weapons. The ability to study the behavior of matter and the transfer of energy and radiation under these conditions is key to understanding the basic physics of nuclear weapons and predicting their performance without underground nuclear testing. Experiments at the NIF would provide data essential to test the validity of computer based predictions and demonstrate how aged or changed materials in weapons could behave under these unique conditions. Two JASON panels have stated that the NIF is the most scientifically valuable of the programs proposed for science-based stockpile stewardship. The National Academy of Sciences has initiated its review of the scientific and technological readiness for NIF construction; we expect to have its report by March of 1997.

Construction of the NIF at LLNL is part of the stockpile stewardship preferred alternative in the Stockpile Stewardship and Management PEIS. The environmental analysis concerning the NIF in the final PEIS will be sufficient for approving its construction and operation. The final decision on whether to proceed with NIF, and if so where will be made in the Record of Decision scheduled to be issued in November.

The NIF project currently has about 300 persons involved in design and project-specific research and development. The project is expected to begin site preparation in FY 1997 which would allow major construction to begin in FY 1998 and project completion at the end of FY 2002. Title I design activity is now underway and will provide cost estimates on the project baseline in October 1996. The FY 1997 budget request of \$191 million will allow the DOE to prepare an industrial component fabrication

capability and to complete Title II, site-specific, detailed construction design. This work will provide the basis for a construction decision by the Administration in mid-1997.

The project plans to initiate some site-specific Title II work in October, before a Stockpile Stewardship and Management Record of Decision on siting, using the preferred LLNL site for specific choices. These activities would be consistent with Council on Environmental Quality regulations regarding interim actions.

The December 1995 DOE report "The NIF and the Issue of Nonproliferation" has guided planning for the facility's use. Implementation of the report's recommendations will be outlined (along with scientific plans) in the "Facility Use Plan of the NIF" to be issued in draft about October 1. Specific processes for openness and access control at the NIF are being tested at the Nova facility and will be documented.

Test Readiness

President Clinton has directed the Department to maintain a basic capability to resume nuclear testing activities at the Nevada Test Site should the United States deem it necessary. One way the Department proposes to retain this capability is to conduct, over the next several years, a series of subcritical experiments with nuclear materials at the Nevada Test Site. Subcritical experiments use high explosives to create some of the physical conditions, such as pressure and temperature, under which nuclear materials are subjected to function in a nuclear weapon before reaching the nuclear stage. A final decision on these tests will be made following completion of the Nevada Test Site Environmental Impact Statement, which is expected shortly.

The experiments would provide an improved understanding of certain dynamic material properties of plutonium essential for assessing nuclear warhead performance, reliability, and safety. Subcritical experiments would also help the U.S. monitor the aging nuclear weapons stockpile, and assist in developing our computational and modeling capabilities by providing essential experimental data on the performance of aging warhead components. Thus, in addition to contributing to our readiness to return to nuclear testing, if necessary, these subcritical tests would provide, in the near-term, experimental data needed for the ongoing stockpile certification and surveillance programs.

Infrastructure Improvements

In FY 1996, Congress appropriated an additional \$106 million for enhanced stockpile surveillance, advanced manufacturing, and Core Stockpile Management activities. DOE has distributed, and the plants are using, these funds to meet near-term needs of the stockpile, support enhanced surveillance activities, support

additional requirements stemming from the Department's dual-track tritium strategy, and to support infrastructure upgrades across the weapons production complex. More than one-half of the additional funds, \$66.2 million, were allocated to infrastructure upgrades and near-term stockpile needs. About \$25 million was allocated to the tritium program. \$11.5 million was allocated to the Enhanced Surveillance Program and \$3.3 million is being used to support the preparation of conceptual design reports in support of the Department's efforts to downsize the production plants.

BUDGETARY OUTLOOK

We are committed to a long-term program to stabilize the weapons budget at approximately \$4 billion per year over the next ten years. This sustained level of funding is necessary to maintain a strong nuclear deterrent and to ensure continued safety and reliability of the stockpile in the absence of nuclear weapons testing and new production. As President Clinton has stated, strong bipartisan support is needed to provide the funding stability necessary for the success of Stockpile Stewardship and Management. This continuing commitment to Stockpile Stewardship will be maintained by the Clinton Administration.

COMPREHENSIVE TEST BAN TREATY

On September 10, 1996, the United Nations General Assembly voted, nearly unanimously, to endorse the Comprehensive Test Ban Treaty that was negotiated at the Geneva-based Conference on Disarmament. President Clinton is expected to sign the treaty next week in New York along with the other four nuclear weapon states and a host of other nations.

These events follow more than three years of effort on the part of the U.S. negotiators, and even more years of preparation by the Department of Energy and its national laboratories to meet the challenge of maintaining our nation's nuclear stockpile without underground testing and to develop the verification technologies that will ensure compliance with the treaty.

MAINTAINING THE DEPARTMENT OF ENERGY

We believe the Congress and the Executive branch can, by working together, improve the performance of the Department's missions, at lower cost, for the benefit of the American taxpayer.

The Department's Strategic Alignment Initiative has already achieved substantial savings, reduced unnecessary activities, and improved the focus of our activities. For example: our total federal personnel level has fallen by nearly 1,300 in the past year. By the end of this month we anticipate that DOE contractor personnel will be 35,000 fewer than at the end of FY 1992. With

the help and guidance of the Congress on these and other matters, we have recast the Department's mission in the post Cold War period and we have reduced the Department's overall budget by \$3 billion in three budget years. At the same time we have stabilized the Defense Programs budget.

The national security mission of the Department is vital and ongoing. The Departments of Defense and Energy believe that the weapons program is strong and that it should remain in the DOE. The separation of our nuclear weapons program from the Department of Defense has served the country well over the past 50 years. This separation gives our country an important second level of oversight to ensure that important issues regarding these incredibly powerful weapons of mass destruction get fully aired at the highest administration levels. DoD has repeatedly expressed the view that it does not want to acquire these programs. Secretary of Defense Perry as recently as April 17, 1996, reiterated his opposition to transferring Defense Programs activities to the DoD and stated that "DOE is currently managing the nuclear weapons complex and maintaining a safe and reliable stockpile."

CONCLUSION

The United States will continue to face a broad array of nuclear dangers. The Department of Energy is committed to using all of its unique and valuable people, plants and laboratories to address the many challenges that will arise in the future. Through a strong Stockpile Stewardship and Management program the DOE will be a strong partner with the DoD in maintaining a smaller yet effective, safe, reliable, nuclear deterrent.

Mr. HUNTER. Thank you very much, Mr. Curtis. General Joersz, do you have a statement you would like to make?

General JOERSZ. I do not. Thank you.

Mr. HUNTER. OK. Dr. Reis?

Dr. REIS. No, sir.

Mr. HUNTER. OK. Let me just open this up and I will advise the members that we are not going to observe the 5 minute rule. We will try to for purposes of thoroughness let people have a chance to explore some areas. But it appears to me that—and I want to go down the litany of the 11 areas of concern that we talked about—but just off the top, since Vic is here especially, that our capability of maintaining the stockpile is largely going to depend on our forensic ability, if you will, in terms of being able to understand what is going on, what is evolving in these weapons, since we are not able to test. That means we are going to have to have people, tremendously talented people, and we are going to develop a certain area of knowledge that is going to be very specific, very critical. Do you think we are on our way to developing that? Is that forensic capability developing at this time?

Dr. REIS. Mr. Chairman, I think the picture——

Mr. HUNTER. Pull it a little closer there, Vic.

Dr. REIS. I think you have put your thumb right on the, if you will, on the most important problem. It really is the people who have and their judgment that we really are dependent on, and that would be true whether we tested or not tested. It always gets back to the level. I think we really have——

Mr. HUNTER. Vic, hold on for 1 second. Give him Charles' mike.

Dr. REIS. Is that better? Yes, I think it sounds better. We knocked over the water in the Senate. We will try to do a little bit better here. Mr. Chairman, I think you have put your finger right on the most critical problem that I see in terms of the Stockpile Stewardship and Management Program, and it really does have to do with the people and their judgment because it is their judgment that ultimately we all depend upon to tell us whether the stockpile is safe and reliable, and that would be true whether we had testing or did not have testing. It ultimately gets down to that.

I think we have made a lot of progress, as Secretary Curtis has said, in terms of that. The Enhanced Surveillance Program is getting started this year. It is a joint program with both the plants and the laboratories. We recognize we need both, the people from both of those places, to understand that. We have had in the past year several real examples of how this works. I cannot in open session go through them with you. But I would be, you know, more than—and they are described in the Green Book—but we would be pleased to go through them with you and this junior staff and any of the members obviously in some detail on how that process is working.

That came through again in this year's, in the first year's again annual certification process where we just did not look at it ourselves. We brought in a number of outside experts, particularly from the strategic command, brought in a series of outside experts to go through in detail just how well that is doing, and again that information will be available, you know, to you very, very shortly, and it is classified. We cannot describe that in detail, but I can give

you my personal commitment that we are certainly not there yet, but we have made significant progress over the past 2 years, and we have, I think, a clearer direction in where we are going to.

Mr. HUNTER. You are personally, you are personally satisfied with the progress, Vic?

Dr. REIS. I am more than satisfied, and I would urge you to not just take my word for it, Mr. Chairman, but speak to the people in the laboratories, speak to the senior people in the plants to get their views as well.

Mr. CURTIS. Can I add?

Mr. HUNTER. Yes.

Mr. CURTIS. I think we feel pretty good about meeting the challenge of maintaining and refreshing the talent pool in our laboratories. I think that maintaining the capability in our production side of the complex will undoubtedly require more interactions with industry because some of the cutting edge technology is now in industry and not in our production plants, and so that is one of our strategies. We have a concern particularly with the erosion of our test readiness competency at the Nevada test site, and I think that should be fairly acknowledged on this record. That is a big problem. We do not have a solution for it yet, and we are working the problem.

Mr. HUNTER. OK. And now Mr. Curtis and Dr. Reis, are you familiar with the—there was a Livermore study that we were apprised of to the effect that at least that laboratory is concerned about their ability to continue top-flight nuclear research, weapons research, and retaining the personnel necessary to do that. That goes somewhat to my question about this important new core competency that we are talking about. Have you seen that study?

Mr. CURTIS. I am not sure I have seen that specific study, but I am aware of the concern. The concern is an entirely legitimate concern. Fortunately, the Congress has shown bipartisan support for two matters that can address that core competency. One is the advanced or accelerated strategic computing initiative. As you know, we have announced the joint venture, Livermore and IBM, to build a 3-teraflop, 3 trillion operations per second machine. That computational capability is 30 times higher than anything that is available today in the market, and that computational capability will both attract and maintain talent to that laboratory, but it also will give it a capability that will be very robust.

Second, the Congress has shown bipartisan support for the National Ignition Facility, which the JASON's evaluates as the most important scientific element of the science-based Stockpile Stewardship Program. That, too, will attract and maintain top-flight scientists for Lawrence Livermore National Laboratory, and we are also going to improve the firing facility out there.

Mr. HUNTER. OK.

Mr. CURTIS. So those types of initiatives, the scientific challenge—scientists respond to challenge. The challenge of meeting the stewardship responsibility combined with these enhanced capabilities, we believe, is an appropriate and effective strategy for maintaining and refreshing this talent pool.

Mr. HUNTER. OK. Thank you. Let me ask my colleagues to indulge the committee. The chairman is with us and his colleague,

Mr. Lindsey Graham, who has the site, Savannah River site, in his congressional district, is here, and the chairman would like to take a few minutes to take his time and yield to Mr. Graham. So without objection, I recognize the chairman.

The CHAIRMAN. Yes. I yield my time to Mr. Graham, my colleague from South Carolina.

Mr. GRAHAM. Thank you, Mr. Chairman, times two for letting me be here today. As you know, I have more than a casual passing interest in tritium. I did not know what it was before I got in Congress so I have learned a lot, thanks to the people at DOE and folks in Aiken. It has been an interesting experience. I know we have got to vote in a second. You are talking about a dual path for tritium production. That is the back-up technology, I guess, of a commercial reactor in existence to maybe supplement the accelerator. Can you discuss a bit about the cost of plutonium disposition and what are we going to do to lessen the plutonium storage problem that we have, and if there is a dual track we could maybe merge later down the road?

Mr. CURTIS. Yes, sir. The Department is evaluating the various quote "reasonable options" for plutonium disposition. One of those is to irradiate the plutonium by making a mixed oxide fuel of the plutonium, irradiating it, and therefore creating the same type of radiation barrier that spent fuel from commercial reactors would have. That is the so-called spent fuel standard.

We are also evaluating a vitrification option and a deep-bore hole option for the disposition of the excess, plutonium excess, to our national security requirement. We are engaged with the Russian Federation in a bilateral discussion to try and have our disposition activities work in parallel with theirs, and we have agreed to a number of test evaluations that will involve both the reactor path or the vitrification path. As far as determining the cost for our plutonium disposition, we have not yet defined a cost figure because it will depend on the path. I think it is fair to say it will be expensive.

Mr. HUNTER. Gentlemen, we will break. We have just a few minutes before this vote. So we will break for the vote, come back and we will have Mr. Graham continue his questions, and we will finish that, and we will keep going. So we will break for a couple minutes. Should take us about 10 minutes to get back.

[Recess.]

Mr. HUNTER. The subcommittee will resume, and Mr. Graham, you may resume your questioning.

Mr. GRAHAM. Thank you, Mr. Chairman. I believe we were talking about plutonium. We are going to put it in a hole, we are going to turn it into glass, or we are going to burn it. Is that the short answer?

Mr. CURTIS. Those are the reasonable options being evaluated. Right, yes, sir.

Mr. GRAHAM. OK. All right. And we do not know the cost of the three?

Mr. CURTIS. There will be—we are doing, as we are required by law, an evaluation of these reasonable options pursuant to an environmental impact statement process. That we expect to conclude by December of this year. There will be a cost appendix associated with that. Now, those numbers will have varying degrees of reli-

ability. As you know, cost estimation is a black art and not often reliable.

Mr. GRAHAM. Right. If we choose the option or when we study the option of burning the plutonium, what source are we going to use for the irradiation? Are we going to use an existing commercial reactor? What would we do?

Mr. CURTIS. When we put our request for expressions of interest on the commercial light water reactor for the production of tritium, we also asked for expressions of interest from operators and owners of commercial light water reactors for the plutonium disposition mission, and we received a number of expressions of interest of owners of existing facilities to do both missions or to do only the plutonium disposition mission.

Mr. GRAHAM. So that will be looked at as a possibility of combining tritium production with plutonium disposition?

Mr. CURTIS. It is possible, yes, sir.

Mr. GRAHAM. OK. I would encourage you to do that because I think that might be something that would save the taxpayers some money. When you talk about hurdles and challenges to produce tritium, let's talk a bit about the commercial light water reactor option. Can you hear me good?

Mr. CURTIS. Sure.

Mr. GRAHAM. It would sort of be taking the country in a new direction by taking an existing commercial reactor that has produced civilian power and using it for a military purpose. What hurdles do you see, if any, legally or politically to do that?

Mr. CURTIS. I think there are three, but before I list them, let me say it has been done before. It was done at our Hanford Reservation where we both sold power or power was sold from a reactor that also produced tritium for the complex.

Mr. GRAHAM. Who owned the reactor?

Mr. CURTIS. What they did is they had a separate ownership of the balance of plant, which was the power generation part of the plant.

Mr. GRAHAM. Did the Government have the license?

Mr. CURTIS. The Government owned the reactor, and it was not licensed because when the Government owns the reactor, it is not required.

Mr. GRAHAM. OK. I got you.

Mr. CURTIS. Nor does the Nuclear Regulatory Commission [NRC] have any capacity to license it.

Mr. GRAHAM. I got you. OK.

Mr. CURTIS. Three impediments are first you have a fuels impediment question. The agreements with, cooperative agreements with EURATOM, do not appear to permit the use of EURATOM source fuel in a circumstance that may be weapons related. So we would probably have to use U.S. origin fuel that does not have that tied to it. That is one.

Second, the utilization of or the conduct of the tritium production mission in a commercial light water reactor will probably have to be licensed by the NRC, which will require an amendment to an existing license for an operating commercial reactor. And then, third is, of course, the general political question as to the appropriateness of mixing the mission of commercial power production

and tritium production. And that political question may become manifest in the appropriations process at any time. So we will want to have contingencies if we choose the commercial light water reactor route whether we are buying irradiation services or buying a reactor itself. We would have to have contingencies that would assure us that if we lost the capacity to sell power from the reactor because of this institutional concern, we could nevertheless assuredly be able to continue to use the reactor for the production of tritium, which would mean, of course, we would have to forgo the power sales.

Mr. GRAHAM. At the end of the day, what percentage of likelihood do you believe exists to use a commercial light water reactor to produce tritium, if you could put a percentage on it? That is you used that as the path for tritium production, what are the chances percentage-wise of it actually coming into being?

Mr. CURTIS. I do not know if I could probably handicap it. It would appear from the comments that we have received that there is a reasonable likelihood that the institutional questions may be resolved in the present circumstance affirmatively to utilization of a commercial light water reactor for these purposes. But I want to emphasize, again, the point I made earlier. I have to say in the present circumstances that political equation can change, and because this mission is subject to annual appropriations, we might risk losing that capacity. So that is always a risk to the program.

Mr. GRAHAM. The second path you have talked about for tritium production is the use of the accelerator. Now as I understand it, technically, we have never produced in large-scale quantities or used an accelerator for production purposes before; is that correct?

Mr. CURTIS. We have not used an accelerator in a continuous wave operation as a production facility for the tritium requirements of this scale and with these energy levels before.

Mr. GRAHAM. And having said that—

Mr. CURTIS. The reason you get that type of answer is that each of the components of the accelerator production of tritium, we have built in other circumstances and operated, but what we have not done, and this is an engineering problem mostly, is put it all together in a production plant. Dr. Reis is genuinely expert on this matter, and if you would like to amplify in any way.

Dr. REIS. I think that captures it. I think again we have used—every part of this has been operated before, and indeed the whole idea of the program over the next few years is to understand how that integration works, look at the specific, reduce what technical risk exists. The issue is really ultimately one of can you produce a plant at costs that would make some sense.

Mr. GRAHAM. And the reason I ask that I am trying to—and I know this is hard to do—the accelerator has, we do not know now if the sum of the parts are going to come together. We think they will. You did an independent survey of the three options that were on the table a year or so ago, and that was building a new reactor to do a multipurpose mission of burning plutonium, create power, and making tritium as a new reactor. Then there was a cost component to that. Then the commercial light water reactor. There was a cost estimate. Then the accelerator. And I guess my concern with accelerator is how certain do you believe—I mean if you can handi-

cap this—do you believe at the end of the day that we are going to be able to put together an accelerator to meet our tritium needs? And would the cost component be something that Congress will accept because the chart that I remember seeing is that the lowest estimate on the accelerator was higher than the most expensive estimate on the new production reactor in terms of billions? Do you see problems there?

Dr. REIS. I do not recall it quite that way because there were very wide spreads on those numbers. But be that as it may, let me describe a bit the philosophy of why we are doing the dual track and why you cannot—what we are trying to do is not handicap either of them, but at this stage we feel, you know, very confident that if we have both of them on the dual track, at the end of the day we will assure the tritium because they are orthogonal, if you will, in terms of the potential risks that we face and the challenges that we have to overcome.

If you add them both up together, then the probability of success is very high. That is our challenge and that is what we are pushing, basically pushing for. It is a little early—I mean if you want to keep the horses analogy going, I mean we have two yearlings at this stage of the game, and we do not know which one of them going but we are pretty sure that the two of them together will add up to a winner. And what we have tried to do, and again I think we can go through this in more detail, is build the program such that as one moves downstream, we will be able to make a much more informed decision, and so that the risks in both of these areas will be much clearer so we will be able to give you a better. Indeed, when we have laid it out so the Secretary of Energy in 1998 will be able to make that decision, he or she will have all the, will be able to make a high probability success decision. And again that is why we are keeping both of these.

In addition, of course, I think it is useful to mention that we will always have the commercial light water reactor as a contingency backup even if we move to the accelerator, and we will always have the accelerator as a back up if we move toward the commercial or a reactor decision. So, again, our responsibility to the Department, to the national security establishment, is to assure that we will have tritium and to try to do that in the most cost-effective manner.

Mr. HUNTER. I want to tell my friend from South Carolina, we will have a second round, and so what we will do now is move to the ranking member, Mr. Skelton.

Mr. SKELTON. Thank you. I am momentarily going to yield to the ranking member of the full committee. I have two questions which I will come back, one dealing with the readiness issue of the Nevada test site, and the other regarding the weapons design production complex. Just put that in the back of your mind. At this time I yield to Mr. Dellums.

Mr. DELLUMS. I thank the gentleman for yielding, but I am very interested in this dynamic. The Chair laid some serious charges down on the table. Mr. Curtis responded to most if not all of them in his opening remarks, but I would be interested in you pursuing the full range of the questions you have. I think that that would

be informative. It would be comprehensive. Then that allows me to fill in the gaps, as it were.

Mr. HUNTER. Well, if we have now yielded, this is a real triple play reactor, from Hunter to Skelton, from Graham to Skelton to Dellums to Hunter. What I would like to do, and I intend to do that, I would inform my friend, I wanted to start out with just in order of the 11 issues that we laid out for you, and you did address a couple of them in your response. So why do not I take a minute or two, if the gentleman wants me to spend some time going over those, we will do that, and then I will move on to the other members without keeping them from having some time to pursue their issues. So let me do the first three here, and perhaps, Mr. Curtis, you and Dr. Reis and General Joersz could respond to them.

First was that the administration committed to a 6-month underground nuclear test readiness posture but never followed through on it. That is No. 1. No. 2, it was originally committed to conducting low-yield hydronuclear experiments, then stopped that. And No. 3, it then committed to conducting "subcritical experiments" at the Nevada test site but has now delayed these tests twice in 3 months. Those are the first three issues or charges that we leveled at you guys this morning so maybe Dr. Curtis, you, or Rick could take those on.

Mr. CURTIS. Let me try to address the test readiness issue because all these relate to those by recalling, first of all, my opening statement or comments I made following a response by Dr. Reis. We should all candidly acknowledge that we have a challenge in maintaining test readiness at the Nevada test site. This is an aging population of individuals who have participated in nuclear tests. They have retired from service and we have tried to address that in the first instance by creating a gray-beards committee, a pool of retired but experienced individuals who have participated in tests who remain available to the Government and can be called into service should we have a test requirement.

Second, we need to exercise the muscle of the test site, and part of subcritical testing is not only to explore the equations of state of plutonium or fissile material generally, which is important to enhanced surveillance and the stewardship responsibility, but also to exercise the test readiness capability. We announced, Secretary O'Leary announced, in I believe it was October 1995, an intention to conduct subcritical tests. It then became apparent that the necessary environmental coverage had not been provided, that the environmental analysis that was necessary for our legal permission to act was not in place, and so we basically suspended that plan to allow the completion of the requisite environmental analysis. That analysis is taking place in the context of a sitewide environmental impact statement for the Nevada test site, and we expect that to be issued in October.

Mr. HUNTER. Can you explain basically what the subcritical test is?

Mr. CURTIS. It is concluded and it is ready to go. A subcritical test—

Mr. HUNTER. Yes.

Mr. CURTIS [continuing]. Is a test that does not provide—first of all, it combines high explosive material with fissile material but at

a level under controlled circumstance that does not allow for a continuous reaction to propagate.

Mr. HUNTER. OK. But I guess—

Dr. REIS. That is correct, yes. If I could just add, I mean, in other words, there is no nuclear explosion.

Mr. HUNTER. Yeah, but you mentioned that there is an environmental hold basically on the subcritical test going on, and that seems unusual that you would have an environmental problem at a site where you have nuclear testing, you now have nonnuclear testing, and there seems to be a problem with it.

Mr. CURTIS. Yes. It is, I know, a continued frustration in dialog on these matters with the Congress, but I believe the circumstance is that the last environmental impact statement conducted at the test site was in the 1970's, 1977, I believe, around that time. One of the requirements of the National Environmental Policy Act is that that information and analysis to support activities be fresh. In other words, if it gets stale, the environmental analysis that supported activity in 1977, 1978, 1979, 1980, will not pass a legal test to support activity in 1996.

Mr. HUNTER. Even if it is not explosive?

Mr. CURTIS. While it sounds illogical that a test site that was conducting full-scale nuclear testing might lack environmental coverage to conduct subcritical testing that does not involve explosions, it is nevertheless the evaluation of our lawyers that we lacked the environmental coverage. We like you want to assure that we can discharge our responsibilities effectively, and that means having confidence that we have the legal permission to act. This department suffers from an unfortunate history of reversal in the courts when it has attempted to act without sufficient legal coverage. We did not want to take the risk to the subcritical program and test readiness at the test site. So we have conducted the environmental impact statement. A final decision, as the law requires, has not been made on this, but the environmental impact statement is completed, and we expect it will be published in October.

Mr. HUNTER. OK. So you think we will get to these tests late this year?

Mr. CURTIS. Well, you have to publish the environmental impact statement. The law requires a 30-day delay before a record of decision can issue. Then a record of decision can issue, and then activities can take place for which there is adequate legal coverage assuming a decision to go forward. If we were to try to take actions now without having gone through that legal path, we would in essence be violating the law and be subject to immediate injunction in court. So there will be some delay following if we decide to go forward with subcritical testing.

Mr. HUNTER. So early next year?

Mr. CURTIS. I think that is probably right. In the January-February timeframe.

Mr. HUNTER. OK.

Mr. CURTIS. If this decision is made. And the reason I keep saying, if the decision is made, is because I cannot risk legal prejudice of that issue.

Mr. HUNTER. OK. Mr. Dellums, I know we want to get to these issues, and we have got the rest of the list to go over. What I

thought we would do is let us get the answers on the next two so we will have the first three knocked out and then ask if members want to have other issues they want to talk, and then we will go back to those again. So let us——

Mr. CURTIS. Could I add two things?

Mr. HUNTER. Certainly.

Mr. CURTIS. First, on the 6-month test readiness, the requirement from the President guided by the advice of the Nuclear Weapons Council was a progressive. We went from a 6-month to a 2- to 3-year requirement, and that is where we are now, and that is what we were appropriated to support.

Mr. HUNTER. So there was never a commitment to maintaining a 6-month test readiness posture?

Mr. CURTIS. We did have a test readiness posture at 6 months.

Mr. HUNTER. I understand.

Mr. CURTIS. For a period of time.

Dr. REIS. Right.

Mr. CURTIS. And then it transitioned to a 2- to 3-year requirement.

Dr. REIS. That is correct. It was just the first year.

Mr. HUNTER. Why did you want to make that transition, Vic?

Dr. REIS. It was felt that that was, you know, as you moved toward a moratorium and as we move toward a comprehensive test ban, we felt that would make more sense.

Mr. HUNTER. We have talked earlier about deterrent formerly being our ready stockpile and our testing, and it would seem that at least having a test readiness posture is a deterrent light, if you will.

Dr. REIS. Right. And a 6-month, you know, it really, as one is moving, you know, as one projects ahead to the type of tests you would want to have as you move downstream, you know, 2 to 3 years made more sense from a fiscal standpoint. If you have to keep everything ready spring-loaded at 6 months continually, that is a very expensive option. The Congress did ask us, and we are in the process—we will forward shortly—of a detailed look at what it would take for 6 months, to maintain a posture at 6 months, what would it take to maintain a posture at 18 months, and what it would take for 36 months.

Mr. HUNTER. You are presently at a 2-year fast readiness posture?

Dr. REIS. Two- to three-year posture, that is right.

Mr. CURTIS. And may I say that the STRATCOM has asked the Weapons Council to evaluate—excuse me—I should say the Joint Chiefs at the request of U.S. Strategic Command [STRATCOM] has asked the Weapons Council to evaluate going to a 1-year test readiness, and that evaluation is being conducted by the Weapons Council pursuant to the request of the Joint Chiefs. It will be made available to the committee.

Mr. HUNTER. OK.

Dr. REIS. Those studies really get into a lot of detail from the perspective of personnel, from the perspective of infrastructure. So I think we are well postured to give a detailed answer as to what your question asks.

Mr. HUNTER. Well, I think the President has made statements in the past about testing if certain other parties test. I think having the ability to do that in relatively short order adds a certain credibility element to those statements when American Presidents on a regular basis have to make them.

Let me go to the third of the three first problems here that we have brought up. The administration was originally committed to conducting low-yield hydronuclear experiments and then stopped that. What is the story there?

Dr. REIS. I do not—

Mr. HUNTER. Are you up to speed on that?

Dr. REIS. At least in terms of the time I have been here, which is almost the complete length in the Department of Energy for this administration, there was never a commitment to look at the low-yield so-called hydronuclear. What we really committed to do was to look very hard at, as part of a stockpile stewardship program, would they make, you know, do they make sense, do they not make sense? We certainly never excluded them from a look at this, and we always reserved the right to, you know—we said they were part of the things we would seriously look at, and we certainly did do an extraordinary depth of going through each of the levels of testing when we made the recommendations to the President last year.

Mr. HUNTER. OK. But you never committed to do that?

Mr. CURTIS. Well, if I may offer, Mr. Chairman, I think it is fair to say that they were very carefully evaluated. There is question as to whether they were permissible under Exon-Hatfield-Mitchell. We, of course, received instruction on that matter from the Senators involved and other Members of the Congress, and it was fundamentally an issue as well as to whether they contributed to some present day verification need for the weapons in the stockpile. Recall that each one of the weapons in the stockpile entered the stockpile under a testing regime. So the question is whether hydronuclear testing or the candidates for hydronuclear testing really served a contemporary need at the time, and so as that evaluative scenario played out, of course, it became part of the debate and equation that led to the Comprehensive Test Ban Treaty which ended at a zero-yield Comprehensive Test Ban Treaty decision.

Mr. HUNTER. OK. Thank you. We have gone down part of our list here. At this point, what I want to do is yield to Mr. Thornberry, recognize him, and let him ask his questions, and then we will go to Mr. Geren and then we will come back to our list of issues here.

STATEMENT OF HON. WILLIAM THORNBERRY, A REPRESENTATIVE FROM TEXAS, MILITARY PROCUREMENT SUBCOMMITTEE

Mr. THORNBERRY. Thank you, Mr. Chairman. I did not want to take the committee's time, but I do have an introductory statement that I would like to be made part of the record.

Mr. HUNTER. Sure. Without objection.

[The prepared statement of Mr. Thornberry follows:]

Statement of Mr. Thornberry

Military Procurement Subcommittee
Committee on National Security

Oversight Hearing on the Department of Energy

September 19, 1996

I would like to first take this opportunity to commend Chairman Duncan Hunter for his leadership of this subcommittee, particularly as it relates to the highly important activities of the Department of Energy and the nuclear weapons complex. Furthermore, I welcome Secretary Curtis and look forward to his comments today.

Today, I will focus my written comments on two broad policy areas affecting the nuclear weapons complex today: (1) management of the complex, and (2) the manufacturing infrastructure for the nuclear weapons stockpile.

Management of the Complex

This subcommittee included a provision in the FY97 National Defense Authorization Act to significantly reform and streamline the management of the nuclear weapons complex. That provision, which passed both Houses and is now awaiting the President's signature, addresses an issue of critical importance to our national security -- the management of the nation's nuclear weapons complex and, specifically, whether a management structure which was designed 45 years ago is able to meet the challenges we face today. Numerous studies completed over the past several years have revealed that it is not.

As far back as 1981, in a report revealingly entitled *A New Headquarters Field Structure Could Provide a Better Framework for Improving Department of Energy Operations*, the General Accounting Office was recommending that changes needed to be made to the basic management structure at DOE.

More recently, in August of 1993, the GAO issued a detailed criticism of past management practices in the Department entitled *Management Problems Require a Long-Term Commitment to Change*. The report lauded recent initiatives by the DOE over the previous year, but noted that strong leadership was needed to build an effective management structure for the future. The report noted communication problems and a weak work force with limited technical and administrative skills. Overall, GAO concluded, "DOE has significant management problems, as reported by many oversight groups and acknowledged by agency leadership." As examples, the report cited a number of telling observations and conclusions, including

- ◆ "According to over 90 percent of the 114 senior DOE managers we interviewed, organizational lines of authority need to be clarified ... Many of DoE's senior managers told GAO that 'fiefdoms' throughout the field structure hampered their operations "
- ◆ "Management of the nuclear weapons complex and the national laboratory system is today in disarray ... its management is under severe stress "
- ◆ "GAO believes that having field units report directly to senior official at headquarters who are responsible for a program is a promising strategy We have supported stronger headquarters-to-field-program accountability in DoE, and having field offices report directly to program assistant secretaries is a way to establish accountability [Our goal] is to establish a more direct line of command between headquarters and field program personnel "
- ◆ "Overall reporting between field offices and headquarters must be established and understood. And direction and guidance on program matters and oversight from headquarters offices needs to be clarified, coordinated, and integrated if the [O'Leary reporting scheme] or any other scheme is to work effectively."

The GAO followed its August 1993 report with another in February of 1994 in which it once again found that, "DoE's management of the laboratories is highly fragmented, lacking both a strategic focus and consistency across program lines."

Two years later, and two years after the most recent reforms by the current Secretary were put in place, the GAO released another report which uncovered still more problems. In this report, entitled *Department of Energy, A Framework for Restructuring DoE and Its Missions*, the GAO found that "Attempts to establish direct accountability among program offices at headquarters, administrative units, field offices, and the national laboratories have been especially difficult. Reporting relationships changed often and sometimes have been confusing."

But GAO is not the only one who has been critical of DOE's management structure over the past several years

In 1989, in a report to the Secretary of Energy, the Advisory Committee on Nuclear Safety recommended that the Secretary "streamline management to make responsibilities clear, that you put knowledgeable people in line positions of responsibility, and that you give them authority. This is important for assurance of nuclear safety. Solving the DoE's problems will require upper management and operating personnel to work together closely and effectively. This will not be possible if the staff must work through buffers of people who are not technically competent "

The Defense Nuclear Facilities Safety Board -- whose members are appointed by the President -- has echoed these concerns. In March of 1996, one of its members, John W. Crawford, issued a report titled *An Assessment Concerning Safety at Defense Nuclear Facilities:*

The DOE Technical Personnel Problem. The report contained a number of conclusions regarding DOE management and internal efforts to fix the problems, including:

- ◆ "Field organizations have had a long history of relative independence from subordination to Headquarters; thus these differences are likely to be difficult to resolve. A recent effort to do so was led by an action group of senior Headquarters and field managers under the aegis of the Strategic Alignment Implementation Group. The results of the deliberations by the action group were reported to the Associate Deputy Secretary for Field Management in a memorandum dated June 22, 1995, from the Manager Richland Operations Office. The document states that 'The Strategic Alignment Team identified the need for clarity in roles, responsibilities, authority, and accountability between Headquarters [and] the operations offices . . . to improve coordination and eliminate duplication of work.'" It offered a plan for doing so. However, the plan was submitted in draft form and, as far as the Board has been made aware, no action has been taken on it."
- ◆ "The Defense Nuclear Facilities Safety Board has recommended a strengthened and streamlined managerial approach and clear lines of authority and control. The DNFSB acknowledges that years of doing things a certain way and bureaucratic inertia has made reform next to impossible."

It is because of these studies that Section 3140 was included as part of the 1997 Defense Authorization Act. The Section would accomplish three main objectives aimed at streamlining the DOE management structure and addressing the concerns raised in these numerous reports. These objectives include:

- ◆ Establishing a clear and streamlined reporting channel between the Assistant Secretary of Energy for Defense Programs and the area offices of the four production sites, three labs and the Nevada Test Site. The direct reporting channel applies only to site operations matters within the context of the site's national security function. Site operations matters are defined to include budget, personnel and procurement matters.
- ◆ Requiring the Secretary of Energy to report to Congress on how to further reorganize field activities and management of the national security functions of the Department of Energy. The plan must identify all significant functions presently performed by the operations offices relating to any of the facilities and laboratories covered by this section and which of those functions could be performed: (1) by the area offices of the Department of Energy located at the facilities and laboratories, or (2) by the Assistant Secretary of Energy for Defense Programs. The plan must also recommend and address other internal streamlining and reorganization initiatives that the Department of Energy could pursue.
- ◆ Establishing a "Defense Programs Management Council" to advise the Secretary on policy matters, operational concerns, strategic planning, and development of priorities relating to the Department's national security functions. The Council shall be composed

of the directors of the four production sites, the three labs and the Nevada Test Site and shall report directly to the Assistant Secretary of Energy for Defense Programs. The Council shall be operated and staffed by the Assistant Secretary for Defense Programs through resources available to the Office of the Secretary of Energy.

Section 3140 would apply to the following facilities and laboratories of the Department of Energy: the Kansas City Plant, Kansas City, Missouri, the Pantex Plant, Amarillo, Texas, the Y-12 Plant, Oak Ridge, Tennessee, the Savannah River Site, Aiken, South Carolina; the Los Alamos National Laboratory, Los Alamos, New Mexico, the Sandia National Laboratory, Albuquerque, New Mexico, the Lawrence Livermore National Laboratory, Livermore, California, the Nevada Test Site, Nevada.

Although implementation of section 3140 may be delayed one year as a result of Section 302 of the Energy and Water Development Conference Report for Fiscal Year 1997, that same bill also directs the Secretary to "develop a plan to reorganize the field activities and management of the national security functions of the Department of Energy." I have been assured by officials within the Department of Energy that they recognize the seriousness of the problem, and they will conduct a serious study in response to this provision and that they will take action. I will, however, closely follow the actions of the DOE to ensure that the safety of workers and civilians are protected, that taxpayer dollars are used wisely and efficiently, and that the security of the country is protected.

Manufacturing Infrastructure for the Nuclear Weapons Stockpile

I remain concerned that the Department is not making the level of investment necessary to assure that our nuclear weapons plants are maintained and upgraded so that deterioration of the facilities and forfeiture of new technology will not jeopardize our manufacturing capability or adversely affect safety systems and the environment. The production plants are severely hampered by old equipment, obsolescent facilities, deferred maintenance and an inadequate modernization schedule.

The Department is not just budgeting insufficient funds for infrastructure investment, but it continues to underfund operation budgets as well. I am most familiar with the Pantex Plant, which is in my congressional district. The plant's core stockpile management operations budget was underfunded by \$17 million for FY97, and early projections have the operations budget underfunded by \$28 million in FY98. This situation forces the plants to forgo routine maintenance and steepens the production facility's path towards obsolescence.

Secretary Curtis remarks in his formal statement to this committee that "the Department's use of the additional \$106 million in the FY96 Energy and Water Development Act should reinforce to the Congress [the Department's] commitment to maintaining the production complex." In fact, it does just the opposite. The Congress had to add those funds because the Department refused to request it. Furthermore, instead of using all of the funds in modernization efforts, much of the money was used to satisfy immediate problems that the Department should

have foreseen and budgeted for, but failed to do so

As others on the committee have stated, possessing an elaborate science-based stockpile stewardship program to understand, predict and detect problems does little good if the weapons complex does not have the capability to fix the problems, produce replacement components, and implement life extension programs

I look forward to working with the Department to remedy these problems in the coming months

Mr. THORNBERRY. Mr. Curtis, the more I learn and study and think about the challenges that are going to face us in the next few years, particularly without nuclear testing, the more daunting they seem to me, and it does seem to me that we are going to have to have the very best people and equipment at the labs, the very best people and equipment at the plants, and the most efficient management structure to make sure that all systems or all cylinders are hitting in order to accomplish this incredible challenge that we have before us.

As you know, I have been concerned about modernizing the management structure. You mentioned earlier that the stockpile stewardship and management EIS should come out. It will be late, but it should come out, and maybe it is reasonable to see what the facilities are before you determine how you are going to manage and control them, but the fact remains that we still have the same management structure for 8 facilities that we had for 18 back in the 1970's. The fact remains that at least going back to a GAO study in 1981 but continuing with a General Accounting Office [GAO] study in 1993, which says DOE has significant management problems as reported by many oversight groups and acknowledged by Agency leadership, 90 percent of the 114 senior DOE managers we interviewed said organizational lines of authority need to be clarified. GAO in 1994 and 1996 had the same concerns that were raised. In 1989 Advisory Committee on Nuclear Safety raised concerns in these areas. Members of the Defense Nuclear Facility Safety Board has raised concerns in these areas, and so the problem is there on how to manage these assets even if we can get the best people and even if we can afford the best equipment.

This committee, thanks to the leadership of the chairman and the ranking member, tried to cut through the bureaucratic paralysis and offered a way to do that. I know you were concerned about micromanagement of the Department, I understand that, and I am sure I would feel the same way if I were in your position. It is certainly preferable, I think all of us would believe, if the Department handles these problems internally rather than Congress imposing any particular sort of solution. And now with the environmental impact statement [EIS] completed, that is the reason I think it makes some sense to give you all a chance to do that. Of course, as you know, there is a requirement for a study that has to be done within 120 days, and the provisions that will be signed into law will be delayed while that study is going on.

I think that is fine, but it does seem to me that it is up to you to see that the study is done right, and what I really want to ask is what are your intentions in that regard, who is going to do it, who is going to be responsible for it? Are you going to look, is it going to be an internal thing where everybody pats each other on the back, or are you going to look at these outside folks that have some real concerns about what is going on, and I might add including past officials of the Department, many of whom I have visited with, that have, I think, a very important contribution to be made? So how is it going to be done?

Second, are you committed to try to overcome the history, the internal politics, the self-interest, that exists to make sure that we have clear lines of communication and responsibility and authority

which, again, I think are just going to be absolutely critical if we are going to be able to do the job that is expected?

Mr. CURTIS. First, let me say I appreciate your comments. How the Department is organized to manage its responsibility is a very legitimate concern for the Congress and for the Department. It is certainly so that we need to alter the management lines—excuse me—need to alter the method by which the Department applies its resources to management to more effectively and more cost effectively and efficiently manage the complex, and we have been engaged in a strategic alignment initiative to both downsize and re-engineer the Department's management that Secretary O'Leary has initiated, and we at the same time are continually instructed by the Congress with respect to some of these matters.

As you probably know, in the energy and water appropriation bill that was passed this last week and a half, the program management in defense programs is going to be decreased by \$30 million. That is going to effect change. And so we have got a little bit of a moving target and a dynamic in the process. We will take, and do take, very seriously this study requirement. We, I can assure you that this is something that I recognize requires my personal attention and it will require the personal attention of the Assistant Secretary for Defense Programs, and it will be conducted under his direct supervision and perhaps I would have him offer additional comment to it.

Dr. REIS. Yes, I would be delighted to because I think this is really one of the major challenges we have, and really I appreciate the opportunity to do this analysis. I think it is very important that we make it happen, and I have discussed this with all my senior managers frequently. I should point out that we have really reorganized in many respects the immediate office, that we have made the change, but this has not been fully propagated throughout the system, and, as you point out, for us to make major organizational changes before we knew and had in place what the direction is would require too much turbulence in a turbulent situation under the circumstances.

I think we now really have the new mission. We have the challenge. We have the elements of those things, I believe, in place in terms of the programs we are doing, but we have not yet fully integrated our management system to support that, and the 120-day study will—it is at the right time. We would be doing this, honestly we would be doing this anyway, particularly with the reductions in dollars that we need to do it. It is absolutely essential that we re-engineer this. We are not coming at this, however, closed. We have done our own, you know, look at the broad staffing requirements. As soon as you look at staffing requirements, you recognize does the organization fit the staffing? It is not just numbers. It turns out to be do we have the right skill mix? Are the right skills in the right places? The structure that the Department of Energy had put together for many years fit a large production complex where we had people at plants, we had, you know, very effective, Albuquerque, you know, operations office. We had a headquarters. All of those things are within the mix that it is essential for us to look at both internally within the Department, and you should be able to feel comfortable that we have got the best people at the right

places, and that those lines of authority and responsibility are clear to you, clear to us, clear to the Secretary and particularly clear, as well, clear to our customers in the Department of Defense so they understand who the right people who are doing this.

Mr. CURTIS. Let me offer this. Why do we not try and come up and brief you how we intend to go about the study?

Mr. THORNBERRY. Yes.

Mr. CURTIS. Because obviously we want it to have credibility with you, with the chairman and this committee, and so part of that is that you have confidence that we are going about it in an intelligent and an objective way.

Mr. THORNBERRY. I appreciate that. I would only specifically urge you to look outside the Department—

Mr. CURTIS. Yes.

Mr. THORNBERRY [continuing]. In what you are going to consider because I do think there is a wealth of knowledge and expertise that we all need to take advantage of, and I have been trying to do that.

Mr. CURTIS. Right.

Mr. THORNBERRY. And the only second thing I would urge upon you is whatever happens we have got to make sure that we have clear lines of communication and authority. In case there is a safety problem, you need, you or your successors need to know it quickly without any hassle in getting it there. Let me ask briefly, Mr. Curtis, you mentioned in your statement that the stewardship and management PEIS is coming out in October. I think it was originally due the first of August. Can you tell us why it is going to be about 2 months late?

Mr. CURTIS. Well, I think that getting these things concluded and confidently constructed so that they will withstand legal challenge is a very difficult question that is considered very carefully, and so we have been engaged in that process.

Mr. THORNBERRY. OK. But it is completed, as I understood?

Mr. CURTIS. It is.

Mr. THORNBERRY. And so we are waiting on just printing now to come out?

Dr. REIS. If I could, let me add to that, Mr. Thornberry. There were a lot of very useful comments that came in during this period, many of these from your colleagues as well, and I think we really wanted to ensure that we did not have to go through this, that when the document was produced, we were able to, you know, very clearly answer specifically all of those comments so not just the Congress would feel comfortable. This is a legal document. We have to ensure ourselves that we are protected from any lawsuits or anything like that.

Mr. THORNBERRY. OK. Mr. Chairman, if I could go, well, there is one other area that I wanted to ask about, and that again comes off of a segment on page 3 of Mr. Curtis' statement. You talk about the \$106 million which Congress provided last year for upgrades in the production as reinforcing to Congress our commitment to maintain the production complex. The concern that, one of the reasons I think we have some concern is that those upgrades and modernization are not in the administration's budget. They are things that we have to add in, and that is why I think you do get some

questions about the administration's commitment to making sure we keep the top quality facilities out there.

And along that line, as I am sure you are aware, there is another \$80 million that is being provided this year along the same line for modernization and update of the facilities. Some preliminary discussions of information I have got indicates that only about \$59 million of that is really going to go into the intended purpose. The other \$21 million is going to be used to fill in holes and other places because of some shortfalls. That is another reason for concern. What can you tell us about how that money is going to be allocated, whether it is going to be the full \$80 million that will go to update, maintain production facilities, whether they be at the labs or the production plants, and to what extent is headquarters going to be involved on making those allocations?

Mr. CURTIS. Well, let me talk about it first in terms of the \$106 million. What we had in the context of our 1996 budget were different instructions from our authorizing committees and our appropriating committees. And so what we tried to do is reconcile those instructions against our best judgment as to how to be faithful to the spirit and will of the Congress and to our own judgments about where the money could be most effectively applied to our mission responsibilities.

We came up and briefed the staffs of all four committees, and we believe that we successfully negotiated an agreement about how those funds should be expended. I suspect with respect to the \$80 million or any additional appropriation to the production complex, we will go through the same process. Now I do not know as we will be able to satisfy folks as we did last year, but that will be our intent. We see this as a partnership, if you will, sometimes rocky, but a partnership between the Congress and the administration to discharge these responsibilities effectively.

Mr. THORNBERRY. The only thing I would add is you said you were just beginning your 1998 budget consideration. I would hope that you all would consider continuing to look at the needs for modernization and updating our production facilities and include something in your request again. I think that does more to show the administration's commitment to it than having us have to add money every year and then having this confusion about how it is allocated and the rest.

Mr. CURTIS. Well, as I said in my opening remarks, we know very well that the committee, Congress in general, has had concerns that we have been too laboratory focused and that we have tried to get that complex not only working together much more effectively in an integrated way than perhaps it ever has, but also get that balance of investment on terms more acceptable to the Congress. We think we have made progress in that.

Mr. THORNBERRY. The only thing—let me, Dr. Reis, if I may—the only thing is, of course, now you are looking at the labs doing some of the production work. So it seems to me if you are going to have to upgrade the facility of Los Alamos, for example, to make pits, then there is lots of places that this money is going to be needed, and we need the commitment from the administration that all of those things need to happen.

Dr. REIS. Let me add one more thing. I know that both you and the members of this committee and others encouraged us to do, which we did, and is working out very well, and that is to include members of the plants as part of our advisory councils, and they come in with us. We have now been through a full year's cycle. We were actually in the process of doing this ahead of time, and we have had people from each of the plants. In fact, we are going back now to start, we started with Kansas City, and we went through the cycle. We are now back, basically back through Kansas City, and that has worked extremely well for us, and I think you might again want to talk to the people from the plants and how they feel, and I have discussed this with the directors from the contractors, from the operations offices, and so forth. And that really has been, you know, while they have worked on individual issues, the real key is they feel and they are really part of that team and that flow back in terms of what we are doing, and we have learned a lot from that particular exercise. That has worked out extremely well.

Mr. HUNTER. That question and response—I am going to go to my friend, Mr. Skelton in just a second—but that question takes us to the fourth concern that I listed in the opening statement, and that was the budget shortfall, the projected shortfall, and I have got a list of the defense programs outyear budget profiles, which lists your request and below that lists the current outyear guidance that you have been given, and that accumulates to a fairly massive shortfall. I had a projected shortfall of \$4.5 billion from fiscal years 1997 to 2002 so the funding—and maybe we have somebody to run this down to Vic, if you do not have it.

Mr. CURTIS. We have it.

Mr. HUNTER. Vic, maybe I tell you maybe you could take a look at that while I have Ike ask his question, and we can come back to that.

Mr. CURTIS. I am familiar with it, but if you prefer I will wait.

Mr. HUNTER. It is your chart. Yeah.

Mr. CURTIS. For Congressman Skelton, I would be happy to wait.

Mr. HUNTER. OK. Let me go to Ike because we have taken a lot of time on this side of the aisle.

Mr. CURTIS. Sure.

Mr. HUNTER. So let me ask Ike, go right ahead and take as much time as you want.

Mr. SKELTON. I appreciate your comments, Mr. Curtis and Dr. Reis, regarding the industrial sites. I might say that, Mr. Curtis, you made reference to working with the staffs on this. It did not filter down to me. I would add that to it.

Mr. CURTIS. I would say that is a mistake, Mr. Skelton. We will try and correct that. I was not aware—

Mr. SKELTON. I just asked our staff member and evidently it did not filter down to him either so whatever the case may be, I would just appreciate Dr. Reis riding shotgun. I do appreciate your comments on the industrial sites and, as I understand it, you are moving ahead in that area. I have, and this may be retrenching old ground, Mr. Curtis, but you mentioned your concern a moment ago in your opening statement about the test readiness issue at the Nevada test site. Would you share with this committee your concerns

and your initial thoughts of the department? Expand on that. Would you please?

Mr. CURTIS. Yes, sir. I think that the, first of all, the conduct of a nuclear test is a very complex process, and in my discussions with those who have conducted tests at the test site, they describe it as somewhat of an art form, not just a science, understanding matters of weather, and basically it is a containment issue, assured containment of a test. The concern, the initial concern, is that folks who have the hands-on experience are retiring out of public service, and so our capacity to address that is somewhat limited. What we have done is create a committee of what we call "gray-beards," who try to preserve this expertise that has lost public service, but who are public servant-minded people who will be available to the department to advise as we try to strengthen our current capability of test readiness, which has eroded, and to be available if we come to the day where we have to conduct a test in order to provide for the deterrent. So that is the first thing we are doing.

The other thing, of course, is what I referred to in my remarks to the chairman as testing the test readiness muscle. Basically you have to go through comparable procedures so that you basically have a conduct of operations that you know is reliable and that the people engaged in various facets of the activity are competent to perform those activities. Those types of exercises are important to test readiness. That is one of the important roles that is seen that subcritical testing will serve so that if after consideration of the environmental impact statement analysis the conclusion is to go forward with subcritical testing, at least that facet, that contributive value of subcritical testing, will be provided.

If that does not happen, we will have to find another substitute for it. So that is a problem yet to be solved, and it is a problem very important for us to have confidence that if we have to test we are able to test in a safe, environmentally sound way. The technical competencies of the test, which are provided by our laboratories, we are a little more confident about.

Mr. HUNTER. Let me just follow up on that question, Ike. We are doing these environmental evaluations now that must precede, by law, the subcritical testing. What happens if you get a no-go because the fact that you have to go through an environmental regimen and permission, if you will, and it always implies that you may not get the permission?

Mr. CURTIS. If that happens, Mr. Chairman, I am sure we will be back talking to you about that issue. It is a fair question. I do not have an answer for it until that decisional process concludes.

Mr. HUNTER. OK. Mr. Skelton or Mr. Dellums, if you have anything that comes up, just go right ahead and jump in. And what we will do, Ron, that takes us to this funding issue, and as I said, you have got a projected \$4.5 billion funding shortfall. Now that is entitled in the document that we have got from you "Offsetting Reductions." And the description of the reductions in the asterisk at the bottom of the page is that the money will be found with "potential savings," No. 1; No. 2, "possible user fees"; and No. 3, "potential adjustments". And we have heard those things before—

Mr. CURTIS. I am sure you have.

Mr. HUNTER [continuing]. In lots of programs. So it looks to me like we are just coming up with arbitrary numbers from the administration, and they are saying you are going to have to fit this program in this smaller box, and we think we will get the money from somewhere. But you know how difficult it is to arrive at dollars, especially that magnitude of dollars from potential savings, potential user fees, and potential adjustments.

Mr. CURTIS. Let me try and give you, Mr. Chairman, and the committee confidence with respect to this matter. As we all know, we have been solving the budget of the United States one year at a time. And we need to solve it on a multiyear basis, and we are hopeful that that agreement that eluded the Congress and the executive this Congress will be achieved in the next Congress. That is, in part, attributable to the apparent uncertainty when we projected a 5-year budget for our national security missions.

The confidence I want to give you is a reference to my formal statement, also repeated in my oral arguments, where I indicated a Presidential commitment to a \$4 billion average annual budget over the next 10 years to support the science-based stockpile stewardship number. As you know, statements that I submit to this committee clear the Office of Management and Budget. That did clear the Office of Management and Budget. The President has identified this as a priority. It will be reflected in his budget. We are confident of that, and the committee should have confidence in that.

Mr. HUNTER. Thank you. And let us move to another one of our concerns that we mentioned in the opening.

Mr. DELLUMS. Mr. Chairman, would you yield briefly?

Mr. HUNTER. Go right ahead, yes, sir.

Mr. DELLUMS. My distinguished colleague and good friend, Mr. Skelton, is going to have to leave. He has a special guest for lunch, and I just want to assure my colleague that I will stay here to the bitter end.

Mr. HUNTER. You know this may not be one of our marathon sessions, Mr. Dellums. This may not challenge our record.

Mr. DELLUMS. I appreciate that, and I just wanted you to know that gentleman had other pressing business but I will be here.

Mr. HUNTER. I understand. We thank the gentleman from Missouri for being so patient and for waiting with us so long.

Mr. DELLUMS. Before you go forward beyond the budget question, an important underpinning of this is that I would say to the chairman that it is very difficult to talk about funding shortfalls in a vacuum. We stopped the Government. I mean you guys brought the Government to a halt around the issue of deficit reduction and balanced budget. You cannot walk both sides of the street. It seems to me that if we are going to talk about the issue of budget shortfalls, then it should be within the parameters and within the framework of the much larger discussion of a limited dollar environment, the incredible politics around the budget, the whole issue of priorities here.

And so I think when we, on one stage, talk about deficit reduction and balanced budget, and then on another stage stovepipe the issue of shortfalls, it is fiscally unsound, it is intellectually indefensible. It may make good politics, but it does not make for good pol-

icy. I think we have to talk about these issues in the much larger discussion of priorities within the framework of a limited dollar environment, and then we do not get into these sharp exchanges around these dollar issues because it is a lot larger than Secretary Curtis, with all due respect, and it is a lot larger than you and I. This is a major struggle in this country that has to be ferreted out.

Mr. HUNTER. Let me just answer my friend by saying this to him. In my estimation, and you and I have served on this committee for 16 years, the most important obligation that the country has, that the Government has, to its people is to defend them, and you have never seen this gentleman recommending that we take, once we establish the threat and establish what we have to do to meet the threat, whether it is constructing and maintaining the nuclear deterrent or doing something else in the Defense Establishment, once we establish that and what it is going to cost to do that, you have never seen this gentleman recommend that we take one dime away from that whether it was pay raises for our military or adequate equipment. So I think that is one of the core requirements that you establish and that you must meet, and then you look at what else you can do for the American people after you have established their security, and this program is the program on which the gentleman himself has stated, you have stated, many times that the last 40 years we have deterred aggression and deterred nuclear war with our strategic deterrent.

We are now entering this area of uncertainty. I think the worst thing we could do right now when we are trying to do through forensics and through stockpile stewardship what we have done in the past with testing is to underfund that program. So I think it is a serious thing when you have a requirement that has some very vague fillers of projected savings, projected user fees, et cetera, when you are talking about not whether or not we are going to build an interstate highway system or do something else but whether we are going to maintain the nuclear stockpile. And the gentleman, Mr. Curtis, has given us an assurance that he is going to have adequate dollars to do it. I think that shows that the administration realizes you got to maintain your nuclear stockpile above all else. So I do not think that that is negotiable, I guess, is what I am saying to the gentleman when you—and the gentleman may disagree and has disagreed with me as to whether the defense numbers are negotiable when you talk about budget discussion.

Mr. DELLUMS. I do not disagree with the latter remark. I think Secretary Curtis is saying that within the confines of the structure of the entire budget, there will be prioritizing, and he is confident that within the framework of that prioritizing this program will receive the significant dollars that it desperately needs, and I would hope that we could go on with the exchange.

Mr. HUNTER. Yes, certainly.

Mr. DELLUMS. I would just like to make one quick point. The question of what is the most important thing that we can do for the American people is the eternal debate of politics, my friend.

Mr. HUNTER. I think we have had that debate a few times.

Mr. DELLUMS. Exactly. So it is not absolute.

Mr. HUNTER. Yeah. Well, you know, I have always been the world's greatest expert on my own opinion, and I just gave it to you.

Mr. DELLUMS. I did not want to say it quite that way, but—
[Laughter.]

Mr. CURTIS. Mr. Chairman, I would be remiss if I did not point out because I certainly appreciate your kind words for me, and I'm sure Dr. Reis does as well, but I should point out that Secretary O'Leary has both stabilized the funding in defense program and increased funding during her tenure in office. She has supported these budgets and she has supported each of the activities that we report on to the committee today, and I think the record should show that very clearly.

Mr. HUNTER. OK. Well, you are certainly on record as stating that, Mr. Curtis, and let me go to the fifth issue that we talked about. The administration promised to resume nuclear testing if another nation tested, but after China, France and Russia tested, we did nothing. You might want to discuss that.

Mr. CURTIS. Well, obviously decisions of this character are made above my pay grade and there may be in a best-evidence rule some other source to comment on it, but if one reflects for a moment on the worldwide reaction to the French test, I think I would conclude that sustaining the moratorium was a good idea. Again, what you have to look at was there any contemporary value that would be contributed by an additional test and that has got to be worked into the equation. When we are talking about hydronuclear testing, for example, I think it was frank to say there was a contest of opinion on hydronuclear testing, and we had it evaluated by the JASON's. Their conclusion and advice to our Government was that hydronuclear testing would not offer any contemporary contributive value. That undoubtedly influenced the judgment not to proceed further with hydronuclear testing.

Mr. HUNTER. Well, you know, my recommendation would be that if that was a decision and that was the reasoning for not testing, that it is probably not a good idea for the United States to rattle the saber and put its credibility on the line by saying if you do A, we will do B; A is then done, and B is then not done for, in your opinion, good reason. But if you are not going to do it, or if your threat is conditional, that is something that should be thought out, I think, before we put our credibility on the line. Let me go to the next—

Mr. DELLUMS. Would the gentleman yield before you go to the next point?

Mr. HUNTER. Certainly. Certainly.

Mr. DELLUMS. I think this would be a useful exchange. I think one of the points that you leave out in paraphrasing the President's comments with respect to testing is very significant. If in the President's judgment, it served a national security need to do so. What the Secretary is saying here is that the evaluation at a higher pay grade was that to resume testing in response to another nation's testing at that point did not serve the interest of the national security of this country. So if you are going to make the comment, add those very important words, the national security interest of the Nation, and as I understand what they were saying was that the

national security interests of the Nation at some level the judgment was made was not served by simply saying you test, I am going to test. I mean that is a knee-jerk response so the other guy is always dictating what you do. But there is a higher test, and that is national security interests. Is that not part of what the President's responsibilities were, Mr. Curtis?

Mr. CURTIS. Yes, sir, I think you make the point very well, and, you know, I think the record should be very clear on this, and I am not sure I have the authoritative way of making it clear, but it is my understanding that the administration's position was that if another nation tested, it would review the moratorium. It had not put it in the vocabulary of if another nation tested, we would test, but I think that requires some clarification. I can only say that is my understanding. But I would like to clarify the record on that.

Mr. HUNTER. OK. When was our last test?

Dr. REIS. It was back in 1992.

Mr. CURTIS. Yes.

Mr. HUNTER. OK. How often, Vic, had we tested before that? What was our regular? How many tests per year did we undertake in the 4 or 5 years prior to that?

Dr. REIS. It was several a year, three or four a year.

Mr. HUNTER. And those were tests that were done on a regular basis to ensure the reliability of the stockpile?

Dr. REIS. Occasionally they were reliability tests. Frequently, they were physics tests to understand new physical phenomena.

Mr. HUNTER. OK.

Dr. REIS. To look at new weapons. A whole variety.

Mr. HUNTER. OK. So let me ask you this, Mr. Curtis. That was 1992 we had the last test. We made this statement that we would, in your words, at least review the test. There was a threat implicit—I mean the President did not say these words for no reason; they were not a mistake—that we were going to take action with respect to tests if, in fact, another nation tested, and then China, France and Russia tested. So we were making a couple of tests a year up to 1992 and we stopped. Now you said you kind of looked at this and it did not look to you, or at least in this blush looking at it, it does not look like there may be any national security reason for testing.

Well, if we had a requirement to ensure stockpile stewardship, if you will, and stockpile reliability, if it required about two tests a year up to 1992, how did that requirement go away after 1992, and so did you do a review and go to Vic and say, you know, Vic, the President made this statement, these other nations have tested, would you do a little analysis to see if we cannot do a test, and if we would not serve stockpile reliability by undertaking a test, because if two tests a year were the requirement for reliability up to 1992, how did that go away after 1992? Did you ask the question would we serve stockpile reliability by undertaking a test?

Mr. CURTIS. The historical perspective is, I think, somewhat useful. Of course, the original moratorium was put in effect when President Bush was in place.

Mr. HUNTER. Right.

Mr. CURTIS. So the question is always whether to extend it or to resume testing.

Mr. HUNTER. I understand. But I am talking about the fact of the practical aspect of why you have tests, what they do, and whether they would not have served us well to have done one?

Mr. CURTIS. And I think that Dr. Reis made a very important point, that the tests that were conducted in advance of the called moratorium in 1992 served a multitude of purposes including the exploration of various physics problems. I think I can say categorically that there was not a requirement to test to resolve a safety or reliability question with a weapon during the period 1992 to the present day. Let me make another, I think, very important point.

Mr. HUNTER. Are you sure of that?

Mr. CURTIS. I am sure of that, yes.

Mr. HUNTER. And Dr. Reis, you agree with that?

Dr. REIS. Yes.

Mr. CURTIS. Yes.

Mr. HUNTER. OK.

Mr. CURTIS. And another important point that as an outgrowth of the President's decision on the Comprehensive Test Ban Treaty, we have put in place an annual certification process that requires each of our laboratory directors, STRATCOM, the Joint Chiefs, the Nuclear Weapons Council, to consider and certify that the weapons in the stockpile meet safety and reliability requirements. That did not exist before. That annual certification process is new, it is transparent, it is obviously available to the committee in its classified form, and it is an added confidence that the nuclear deterrent is being provided for without unresolved safety and reliability problems with respect to weapons that would require testing to resolve.

Dr. REIS. Let me add to that briefly because it goes right to the heart of your question because a specific question that is asked as part of the certification that each of these people, you know, the laboratories represent is should we now next year go back and plan on testing? Is there something that requires us to test? It is not just are we OK? It specifically is is there some problem that does really require testing because there are always, you know, as the stockpile ages, there are always questions that are asked. And the certification process, having been through it this year, goes after these things in extraordinary detail weapon by weapon, part by part, piece by piece.

I should add that what the, you know, as well, if we are talking a little bit about history, since I remember very, very specifically since it showed up just before I was about to start my watch, what the President did when he extended the moratorium. He specifically asked the Department of Energy working with the Department of Defense to look at the possibility of extending the stockpile specifically safety and reliability in the event that we would no longer have any testing at all. And that really was the genesis of the Stockpile Stewardship and Management Program as we know it now. It was specifically to answer just that question.

Mr. HUNTER. OK. Well, let me try to get this straight. We are spending billions of dollars on stockpile stewardship, and because as, Vic, as you told me in the past, we are going through uncharted waters, and you have said in the past the most reliable way obvi-

ously if we were still doing it would be to test to ensure reliability. Now, Mr. Curtis, you have said that absolutely that there was no safety or reliability requirement for a test from 1992 to the present date. That would lead, I think, the average person to ask the question then why the need for the billions of dollars of stockpile stewardship?

Mr. CURTIS. A couple reasons. Let me say there was no identified problem of reliability or safety identified by our laboratories as requiring a test.

Mr. HUNTER. But has that been the criteria for tests?

Mr. CURTIS. No, because tests were conducted for many, many reasons in the past, not the least of which designing new weapons and—

Mr. HUNTER. But also for reliability.

Mr. CURTIS [continuing]. Developing new weapon systems. Yes.

Mr. HUNTER. But also for reliability. And the fact that you take a weapon out of the stockpile and you would test it did not necessarily require as a precondition that you had some mechanism or some analysis that had warned you that that weapon might not be reliable because we really had an inability to determine to be able to make that judgment; did we not?

Mr. CURTIS. Let me try to answer this question by going to a point that perhaps I did not make with the clarity that I would like to make.

Mr. HUNTER. OK.

Mr. CURTIS. The Department of Energy is a service organization. Its customer is the Department of Defense. Department of Defense basically establishes our requirements. The Department of Defense has not established any requirement for a new weapon or for the design of a new weapon. So we are in a postcold-war environment with no requirement for a new weapon or a design for a new weapon. Now I would suggest to you that if you are in a situation where the Defense Department in its nuclear posture review, the Defense Department has concluded to base the nuclear deterrent on the existing weapon system, some defined set of existing weapons, and you had to provide for the assured safety and reliability of that new nuclear deterrent over time, you would design the same type of system that we have designed even if you could test.

And the reason is that over time you could not rely on the continued ability to test because that could be taken away from you at any time. The Exon-Hatfield-Mitchell amendment was just such an amendment. It passed the Congress and became law. So you would design the same system, I would suggest to you, to assuredly provide for safety and reliability of the deterrent by a science-based program that developed proxies for testing. So I do not think frankly the case is credibly made that this is a more costly system. You would do the same system either way.

Mr. THORNBERRY. Mr. Chairman.

Mr. HUNTER. Yes. Go right ahead.

Mr. THORNBERRY. But would you not ideally have testing at the same time you were trying to figure out whether this stewardship stuff worked or not. Right now we have been testing. That is what we have relied on. Now we are abandoning that and going exclusively to stewardship. Ideally, would you not have both going on for

awhile to make sure the stewardship answers the questions that you need? And I guess that is the concern. When we talk about going into uncharted waters, we do not know whether this stuff is going to work or not. And to have both at the same time, it seems to me, would you give you a measure of reliability.

Mr. CURTIS. The question is whether it is necessary, and that is a fair question, and I would suggest to you that President has reserved the right to conduct tests if the Secretary of Defense and the Secretary of Energy were to advise the president that they could not provide for a weapon system necessary to our national defense, assure its reliability or safety without testing. The President has said if he gets such a certification, he will test.

Mr. DELLUMS. Mr. Chairman, before we leave this item and move to the next item, I would like to say to you and to Mr. Thornberry, the question of moratorium was the action of people like you and I passed a law, became law. President Bush signed that bill into law; the moratorium became a reality on his watch. Let us just put that on the table so that the politics of this go away for a moment. Now let us come back to the substantive issue. We are talking here as if testing as we have known it has 100 percent reliability, we know everything there is to know because we test. There is no way in hell that a test is going to guarantee that every weapon is going to do what it does in testing. So we start with a margin of doubt and lack of confidence.

The question then, the challenge of this science-based assessment, and that word has been used here many times, the challenge is can we get close to the same level or near the same level of confidence that we had in the testing, which was not 100 percent, and that is indeed the challenge? Now, the chairman pointed out that China and France tested, but historically we know that they have only tested a few times, which leads you to the rational and logical conclusion that their data base is limited. We have had at least a thousand tests in this country, a thousand. And every single day somebody somewhere is developing progressive technological capacity, computer capability, every single day, that enhances our ability to mine that gold field of a thousand tests of incredible data.

Yesterday's computers, the day before yesterday's technology, may not be able to mine that data base as well. So one of the challenges is as we continue to enhance our capability, can we mine that? So this notion that in some way tests was God's gift to the world about nuclear weaponry, when we started down this road, we created tremendous doubt. The only species on the face of the earth that developed the capacity to totally annihilate itself. Now we are talking as if testing in some way is going to be the great panacea. I would like to hope that we step up to this great challenge and see to it that we meet the challenge of a science-based issue. I think, Mr. Chairman, this exchange here has dealt with this question so we can get away from the politics of the President saber rattling. How do you saber rattle talking about tests when we are living in a world where everybody is trying to move away from more nuclear weaponry and trying to put that genie as close as they can back toward the bottle, where the world, 150-some-odd nations, coming together saying a comprehensive test ban, and here we are talking about we got to test? The world is going in a

different way. Catch up with the parade. It is going in a different direction. So let us confront the challenges that we have rather than these accusations on a political basis that in some way this administration is not stepping up to the plate. Every time you lay that issue on the table, I just do not think that it has credibility, and I think there are credible responses to it. I hope we have dealt with that issue. Let us move to the next one. Maybe we will be able to successfully address that one as well.

Mr. HUNTER. Well, Mr. Dellums, you have opened some good questions on that issue, though, and I appreciate your comments. Dr. Reis, as a scientist, as a guy with technical knowledge, would testing be valuable today if it could be done in a totally benign political environment and if it had no political or international impact? Is testing of value or has testing become a dinosaur that has no value but helps the economy in Nevada?

Dr. REIS. It would be silly to say that one would not learn information from testing about a specific weapon, but I think you cannot subtract it from a broader national security. The issue is, you know, one would always, as an engineer, as a scientist, you are always interested in getting more data. The question is is that data worth the candle? The point we are trying to make, I think, is even if one could test, one would be moving ahead with the same program, I think, that we have now because ultimately whether you test or do not test is a political issue.

Mr. HUNTER. That is not my question though.

Dr. REIS. Right.

Mr. HUNTER. Because we are talking about whether or not testing has value. Does testing have value?

Dr. REIS. Absolutely. There is no question about it.

Mr. HUNTER. Explain why it has value.

Dr. REIS. That is right because there are always questions that you have to answer, which you could answer easily and perhaps effectively, you know, with a test. That is why it has value. That is true whether I am talking about automobiles or nuclear weapons or anything. One always is concerned about getting more data, and a test gives you a lot of very effective interesting data. I do not think anybody on this side of the table or anywhere has ever denied that a test is useful from an engineering or a technical use. But I think the question—

Mr. HUNTER. How about in terms of stockpile reliability, is testing important?

Dr. REIS. No matter from a reliability perspective, from a performance perspective, no matter what perspective you had, a test would always add to your, you know, would always add to your data base, would always, you know, give you some additional confidence. The real question is how much additional confidence, and are there other ways of getting the same level of confidence or an adequate level of confidence without testing?

Mr. HUNTER. OK. On that point, but you concur with Mr. Curtis that the forensic approach, the stockpile stewardship approach that we are now undertaking, is something that we should do anyway whether you had a testing regimen or not so it is money well spent?

Dr. REIS. The truth is—absolutely. And I think we were doing, if you look at the stockpile stewardship and management did not come, start 1 day from zero. We have been working on many of these experiments for years. The whole program has been try to understand in detail what was happening in the weapons, but we had this additional, you know, we had one additional tool. It was called, you know, the underground nuclear test. When that one tool gets taken away, we have to build on the tools that we have already had, but we have to accelerate some of them, and we have to work harder at some than others. So there is a shift, if you will, the shift in how we are doing it, but I would still concur very strongly with Mr. Curtis.

Mr. DELLUMS. Mr. Chairman.

Mr. HUNTER. Go right ahead, Ron.

Dr. REIS. We have got the right, we are close to getting the right program. I do not say it is the perfect program, but I think we clearly have the right program.

Mr. HUNTER. OK. We are going to go vote, and we all will be back and level some more charges in a few minutes.

Mr. DELLUMS. Mr. Chairman, just one quick thing. My staff sent a note to me that in my zeal to address this issue I think I said more than. I meant to say nearly a thousand.

Dr. REIS. No, no. I think we have done more than 1,000. 1,054 is the correct number.

Mr. DELLUMS. Just intuitively I was correct, then, is what you are saying.

Dr. REIS. That is right. [Laughter.]

As always, Mr. Congressman.

[Recess.]

Mr. HUNTER. We will resume the subcommittee. I know Mr. Curtis has to leave in a fairly short period of time. We do have another several questions that the gentleman from South Carolina, Mr. Graham, wanted to ask about his particular installation, and he should be back shortly. But you have touched on most of the issues that I raised, Mr. Curtis and Dr. Reis. There are a couple here that I think we still need to talk about, and let me go to, I think, it is No. 10, that the administration has not conducted all the tests it believes are necessary to ensure the reliability of the stockpile with tests for some types of weapons far behind schedule, as noted in a recent critical report issued by GAO. First, have you looked at the General Accounting Office report and, second, what is your response?

Mr. CURTIS. Yes, we have looked at the GAO report. Those are tests. These are not tests associated with the nuclear testing issue that we have been discussing, but they are tests associated with various aspects of the weapon that does not involve physics package, if you will. They are conducted by Sandia Laboratory. We have basically put a team together to evaluate this deficiency, get the program back on track to make up for the deficiency, and so this is being attended to at the highest levels and will be corrected.

Mr. HUNTER. Dr. Reis, anything on that?

Dr. REIS. No, that is correct.

Mr. HUNTER. OK. And last, and I will tell you what, I will go over this last issue here, and then Mr. Graham is here, and we will

let him, he has another round of questions he would like to ask. But this is kind of important to us. The administration failed to respond to the committee's request for a list of permitted and prohibited activities under a Comprehensive Test Ban Treaty, and I think that is kind of important so that we can get our arms around exactly what this treaty is, what it means, and as a result, we do not know whether the funds we have authorized can be spent without violating the treaty or whether other nations that are party to the treaty share our interpretation of what is allowable.

Mr. CURTIS. Let me try a response to that, Mr. Chairman. First of all, of course, there is not yet a treaty. We expect the President to sign the treaty on next Tuesday, the 24th.

Mr. HUNTER. But the treaty is in existence. It is not signed yet, but we basically know what it says.

Mr. CURTIS. The document is in existence.

Mr. HUNTER. Yes.

Mr. CURTIS. But as you know, when it is submitted to the Congress, to the Senate, for its advice and consent, and it will be presented with a detailed analysis on an article-by-article basis and supporting documentation, and at that time there will be authoritative address to this issue. Recall that the Congress and the executive in the aftermath of the concerns and questions concerning the Anti-Ballistic Missile [ABM] treaty arrived at an agreement which governed the presentation of information to the Congress about a treaty because it was concluded that any senior official communication to the Congress or a response by any element of the Congress becomes part of the binding interpretative history of that treaty, and, therefore, what we would prefer to do is address the question in the context of the submitted treaty with a detailed article-by-article analysis and supporting document at that time.

I can advise the committee today, however, that there is nothing in the treaty inconsistent with the planned activities that are the basis of our science-based Stockpile Stewardship Management Program or any activity that the Congress has authorized and appropriated funds to.

Mr. HUNTER. OK. So for your stated reasons, basically what you have told us is you are not going to provide a list of permitted and prohibited activities previous to that?

Mr. CURTIS. No. I say that will be done in the context of submitting the treaty.

Mr. HUNTER. When the treaty is submitted.

Mr. CURTIS. And the supporting documentation. But I can tell you that there is nothing inconsistent in our planned and appropriated and authorized activities that is inconsistent with that treaty.

Mr. HUNTER. OK. Thank you. And Mr. Dellums, with your permission here, if you have got something else you would like to get into before Congressman Graham gets his—he has got some other concerns and issues—please go right ahead or you will have time also when Mr. Graham finishes. How much time, Lindsey?

Mr. GRAHAM. Five minutes.

Mr. HUNTER. Yes. We should be able to wrap this up and get you out of here fairly quickly here. Yes. The gentleman from South Carolina is recognized.

Mr. GRAHAM. Thank you, Mr. Chairman. I really appreciate you letting me participate in the committee hearing. As you know, Mr. Curtis and Dr. Reis, the tritium aspect is very important to my district. I think it is important to the country, but I will try to do this in 5 minutes. I have enjoyed the hearing because there has been a lot of talk about money, where to spend it, and is enough enough, and how you manage systems, and from the Oliver Stone theory about what is going on here, some people when you sit back and look at the resources being allocated to the nuclear weapons industry and to the production sites, and our budget at Savannah River, it is going to be some tough times coming there, and Mr. Hunter is worried about the amount of money being set aside to move our weapons programs forward. I think Mr. Dellums has articulated the administration's position well.

Yucca Mountain is not opening up. The commercial side of the nuclear industry is really running into some serious problems. We have got a lot of waste at Savannah River that needs to be dealt with, defense waste. And I do not mean to get over to the EM side too much. But when it comes time to manage all these problems that you have got to manage, and you all have a lot on your plate—I know you do—the tritium aspect, can you tell me why the new production reactor was taken off the table, why it was not allowed to compete with the other technologies?

Mr. CURTIS. The first and overriding obligation on the Department is to meet its mission responsibilities to provide a new production source for tritium. In evaluating how that might most securely be met, you have to consider not only cost, technical feasibility, but also these considerations of political and institutional barriers. We have not had a—I think the fair and straightforward answer is that when one went through that evaluation, we felt that there would be more peril of opposition to a new production reactor than there would be to either of the dual path selections that we made, and therefore we had more confidence that we could fulfill the mission in time consistent with the requirements imposed by the Nuclear Posture Review and the Nuclear Weapons Council.

Mr. GRAHAM. Where did those—

Mr. CURTIS. Remember that that requirement is to have a new production source of tritium to support the lead but hedge strategy by 2005 if it is commercial light water reactor or 2007 for an accelerator. A new production reactor is highly, highly questionable that you could contract for and construct a new production reactor within that timeframe.

Mr. GRAHAM. You have handicapped the new production reactor as being not feasible.

Mr. CURTIS. It is certainly technically feasible.

Mr. GRAHAM. We know it can make tritium. We know that it could probably burn plutonium, and we know it can create power. And I do not want to pit these technologies against each other because I am trying to keep an open mind, and I am not an expert, but you are asking me as a Congressman to sit down and spend billions of dollars on something very vital. And I just want to make sure that it is a fair competition, and the concern I have is it has been taken off the table not because of any economic problem, not because it has more hurdles to overcome politically or legally than

any other option that we have, just because it is a political decision in the administration that we are not going to build a new reactor in America, period. That is my concern. Now whether that is right or wrong, that is a concern, and I am not going to stop having that concern unless somebody can convince me otherwise. I have heard your explanation, and I appreciate it.

Now, given the fact that we are going to have to have a new source of tritium by the year—is it 2011 now?

Mr. CURTIS. It is 2005 if it is the commercial light water reactor, 2007 if it is the accelerator.

Mr. GRAHAM. What does your customer say, the Department of Defense, when do they tell you they need new tritium?

Mr. CURTIS. That is what they say. That is the requirement.

Mr. GRAHAM. OK. So we have gone from 2011 to 2005?

Mr. CURTIS. Yes, sir, and that is because it is driven by the lead but hedge strategy enunciated in the Nuclear Posture Review by the Department of Defense.

Mr. GRAHAM. Well, I support that. I think that is a very rational thing to be doing. Now the timetable of 2005, do you believe that we have, in your budget, set aside sufficient moneys and that we are engaging in an aggressive plan to overcome whatever hurdles exist for the commercial light water reactor, and is there anything that Congress can do to help you with the accelerator project or the commercial light water reactor to meet these timetables?

Mr. CURTIS. I think we do have that adequate funding. I point out that the Congress has plussed up the funding for the tritium responsibility in this appropriation bill, and that will give us greater confidence that we will meet those time horizons.

Mr. GRAHAM. Please consider me an asset in that regard to get this program up and running. Defense waste—one of the legacies of winning the cold war is a tremendous amount of waste that has been generated at Savannah River and other sites. I know that is really not your bailiwick, but it all does come together. Do you believe there is going to be any effort to reprocess the high level defense waste that exists so that if we do store it at Yucca Mountain or any other place, that it can be stored in a more stable form? Do you think that program will continue?

Mr. CURTIS. The current thinking is that reprocessing is reserved for health and safety requirements, and that reprocessing will not be needed to stabilize the material for storage, that some other processes will be sufficient for that process.

Mr. GRAHAM. What are they?

Mr. CURTIS. For example, the entire civilian waste spent fuel discharge is not going to be reprocessed. It is going to be casked and stored in Yucca Mountain in permanent form.

Mr. GRAHAM. I am talking about defense waste.

Mr. CURTIS. And similarly, there are cask storage options for the defense waste and vitrification, for example, and storage in casks. Now what we have said is, as I recall, is that we will explore those options intensively in the time frame between now and I think the horizon is 2002, and if we cannot develop satisfactory alternatives to reprocessing at that time for stabilization purposes, then we would consider utilization of the canyons for that purpose.

Mr. GRAHAM. Thank you. That is all I have, Mr. Chairman.

I did not ask ITER. He wants me to ask about the ITER project, and I know that is probably not within your ballpark.

Mr. CURTIS. All right. What would you like to know?

Mr. GRAHAM. Are we going to be a partner in a global effort to create a new energy source?

Mr. CURTIS. Yeah, I think—

Mr. GRAHAM. ITER and are we going to put it at Savannah River? [Laughter.]

Can I get more specific?

Mr. HUNTER. Now that was the question from his constituent.

Mr. CURTIS. I think the ITER project, the international project with Russia, the European Community, Japan, and ourselves, at present is in an engineering design stage, and what we have said is that we would continue our contribution and participation in the EDA to its conclusion, and it is supposed to conclude in 1998. The construction of ITER and its operation, it is each estimated to cost \$10 billion, total of \$20 billion, and we have said that we are not able to be a full partner in a construction and operation stage of ITER, and so it is because we simply do not see the availability of funds for that project. So not being able to be a participant I think removes the likelihood that if the Japanese and European partners go forward, and I should point out that Russia does not have the money either, it is probably not likely it will be located in Georgia.

Mr. DELLUMS. Mr. Chairman, we are concluding? I just want to—

Mr. CURTIS. Excuse me. Or South Carolina is what I meant to say. That I really need to correct the record on.

Mr. DELLUMS. Mr. Chairman, just a couple quick things. First, on one of the concerns that you started off with was the delay in the programmatic environmental impact study that was supposed to be out in August. The administration's response essentially was it is important for us to do it right the first time, otherwise you get bogged down in litigation, and you defeat your own purpose. I would just like to say for your information, Mr. Chairman, I was one of those Members that weighed in in that process and said, look, take seriously the participation and the contribution of the public and also be sure that you look at every single option across the board from do everything to doing nothing, and so I am one of those people that likes reports on time as well, but we contributed to that, and I think this delay is a minimal delay when you consider what was on the table and the implications for that.

With respect to subcritical testing, I know in response to the question you raised, the response was pretty much that this posed a legal problem, but I would assert to you that it had the potential for also posing a very real environmental ecological problem. I am not a scientist. I do not know, but it seems to me that when you explode something in the ground, you have the potential for the result being new material in that ground and new forms of pollution. That is why we wrote the law. And so I think that the response that it posed legal problems was not just legality for the sake of legality but preserving a very precious thing, and that is the fragile nature of our ecological system.

Having said that, I would just like to say to you that I have appreciated the time that you have accorded this gentleman. I was

saying to someone that I am not sure that two other people in this Congress, Republican and Democrat, given the hostility that has often emerged in the Congress, that would allow us to have sharp differences, but that we continued to maintain our sense of humor and our friendship. I think that is an important aspect of what this process ought to be. I compliment you for that, and I thank you for giving me an opportunity. You and I have been each other's lightning rod for a long time. I do not know what I am going to do when I retire from this place.

Mr. HUNTER. I am going to go with you.

Mr. DELLUMS. Thank you and yield back my time, Mr. Chair.

Mr. HUNTER. I thank the gentleman. I was thinking, Ron, when we leave we can call up the cloakroom and tell them we are going to pair, we are going to pair on the issue.

Mr. DELLUMS. I think we love this stuff. That is what makes it worth it.

Mr. HUNTER. I have always enjoyed my time with you, too, and these are important issues. They are not small issues. So hopefully we are serving the country a little bit as we work these issues. Gentlemen, you have answered all the questions that we laid out in the opening statement here. I had one last question that I forgot to ask, and one thing I learned from Ron is to do cleanup work for the staff, too, so you make sure, you try to get everything on record. What is the Department's view on the requirement to produce new plutonium pits? Beginning when and in what amounts, and under DOE's plan will the capability exist to produce more than approximately 50 pits a year, and if not, why not? Is that the right number?

Dr. REIS. We, as you know, Mr. Chairman, pits are really critical—no pun intended—to the operation.

Mr. HUNTER. Totally lost on us there, Vic.

Dr. REIS. Perhaps somebody who reads the record will get it; right? Besides which we have been doing this now a number of years, you should be getting it by now. That was one the more serious—of course, they are all serious—but that was one of the ones we have really paid a lot of attention to, particularly with the closing of Rocky Flats, there was no other choice but to start a new source of production. We have looked very, very carefully at what the pits, what the primaries are. A major part of our surveillance program in the past and particularly in the future has been looking at new ways of ensuring ourselves that those systems are OK, and having done all that, we feel very comfortable with the choice that says let us go ahead with the manufacturing capability at Los Alamos. Again, all of this will be expanded on in the PEIS. If we need more, as time goes on, if we discover we do need more, we have a plan for getting more because what we are doing at Los Alamos is modular in form, and we can reproduce that whole production complex other places, and we will be looking at, if you will, where that might be. Savannah River certainly is a candidate for making that. So I feel comfortable that part has been done correctly and again we would be delighted to come up and give you a more detailed briefing on that whole pit operation.

Mr. HUNTER. Thank you. Since Dr. Reis has threatened us with a detailed briefing, we will have to attend, but we will take you up

on that, Vic. Let me throw out one last question, and we will wrap up here so that you folks can move on. And I want to thank—incidentally, thank the gentleman from California. Mr. Dellums is a marathoner. He stays to the end of every hearing, and we have had some long, I mean we have finished up some of these hearings 5 and 6 o'clock at night. And Ron, one thing I will learn from you is you got a great work ethic. And I have noticed you do a lot of notetaking, and you are very organized in a hearing, and you go back and review the first questions that were asked to see if they were answered, and I think that is something everybody on this committee could take a lesson from. You learn from hearings, and you really retain your information.

This is something that Mr. Thompson, the inimitable Mr. Thompson, brought up to me here in a note, and our staff is really important to us. They have great ideas and help to give us some discipline and some format to our hearings. And it goes to the big question, and maybe, Dr. Reis, you can comment on this because we have had some great discussions on this, but other nations are testing, we are pulling out. No matter how you describe it, whether in my interpretation that we are doing in many cases the wrong thing by stopping testing or Mr. Dellums' that we are doing what is right and we are moving with the world, we are pulling back from this nuclear dominance that we have had, at least slowing down our end of the dominance by not producing new weapons, by undertaking this moratorium. My sense is that power always fills a vacuum, and that one reason that you did not have a big nuclear club and you did not have a lot of people trying to join the nuclear club aggressively was because our stick was so big in the last 40 years that we suppressed the desire of other nations or the feeling on their part that they could get into the club and could compete. Now, China will continue, will test, presumably continue to test and continue to build new weapons. Russia will continue, if my information is right, to build new weapons. Do you think that this idea that our receding in the nuclear business might provoke others to do more than they would have done if we had retained an aggressive new weapon program complete with testing?

Dr. REIS. That is certainly way above my pay grade, but let me try to give you a sense of looking at it again from the point of view of trying to maintain our stockpile. I think the key to all of what we have been doing over the past 3 years comes out last year when the President announced going ahead for a comprehensive test ban. He really said that nuclear weapons are of supreme national interest and nuclear deterrence is still the centerpiece of our national security policy. And I think the stewardship program and the management program that goes along with that really does support that concern. I mean it really has been raised to the highest levels in this Government. It is still very important. You know Congress is still very, very interested in it. As long as we maintain that will, I think, that will go forward. So I do not see that dropping away, and I do not see that we are displaying weakness by that way. I think indeed we are displaying strength in the sense that we have enough confidence in not just the weapons themselves but the supporting structure, the laboratories, the production complex, that we are keeping them vibrant and healthy. I think that in and of itself

will be a significant deterrent to anybody else, whatever nation we are talking about, if you will, trying to match us in this area.

Mr. CURTIS. I think, Mr. Chairman, it may be appropriate at this point, I just wanted to read the President's words that addresses this issue, and that is, and I quote:

As part of our national security strategy, the United States must and will retain strategic nuclear forces sufficient to deter any future hostile foreign leadership with access to strategic nuclear forces from acting against our vital interests and to convince it that seeking a nuclear advantage will be futile.

We still have the biggest stick. We will maintain that stick, and one of the interesting parts of the Comprehensive Test Ban Treaty is that by arresting testing, you arrest the development of weapons by other members of the Perm-5 and those so-called threshold states.

Mr. HUNTER. OK. But the word, I guess the word "deter" is an important word because that involves a subjective analysis, and whether or not a nation is deterred from entering into an arena in which another party, that is, the United States, has been the dominant party for so many years, I mean those are good words.

Mr. CURTIS. Exactly.

Mr. HUNTER. I guess the question I was asking Vic is do you really think there will be this continued deterrence or do you think others will be motivated now to move into what they see as a vacuum beginning to form in the area of nuclear weapon development? Do you see what I am saying?

Dr. REIS. Sure. I understand exactly what you are saying, and I think the key to what we are doing, though, Mr. Chairman, is we get to ask that question every year. I mean we are not just all right, so the President said, look, as we move into this Comprehensive Test Ban Treaty, we are going to look, relook that question every year. We are not just going to assume everything is OK. And that involves not just, obviously when the President would make that decision, whoever that president might be, he would not just be what is the condition of our stockpile, but it is what is the condition, what is the situation worldwide?

Mr. HUNTER. Mr. Dellums, any final comments, sir?

Mr. DELLUMS. I think they have answered your question. I just would add that, you know, it also deals with the question of order of magnitude. I mean we have superiority. The order of magnitude is so extraordinary. Even China on a worst case basis has said publicly that in their effort to develop a nuclear capability that their policy was to develop a small nuclear deterrent, not to achieve some massive nuclear capability. I think they have adequately answered the question. The final comment was I think most compelling. This is something you address each and every year, and if it takes threshold nations long periods of time into the future to develop this capability, think about how long it would take to have superiority over this Nation's nuclear capability. It staggers the imagination to consider how much time it would take to do that. So this is not a tomorrow threat, and this is something that you can visit on a yearly basis and have more than ample opportunity to address the problem.

Mr. HUNTER. OK. Thank you and any closing comments, gentlemen?

Mr. CURTIS. Only, Mr. Chairman, I think this type of hearing is very useful to ventilate these important issues. They are important issues to our national security and to the future course that this country and the world takes on weapons of mass destruction, and I appreciate this exchange. I know very well of your genuine interest in the national security of the United States, and I would like to hope that we have provided some basis to believe there is some ground for bipartisan agreement here.

Mr. HUNTER. Well, I think you have, and I want to also thank General Joersz for being so talkative today. [Laughter.]

But for having the patience to be here with us.

Mr. CURTIS. That is the experience of a general officer, sir.

Mr. HUNTER. Thank you very much, gentleman. The hearing is concluded. Thanks very much.

[Whereupon, at 1:16 p.m, the subcommittee adjourned.]

[The prepared statements of Mr. Johnson and Mr. Steinhardt were submitted for the record:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Military Procurement, Committee
on National Security, House of Representatives

For Release on Delivery
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NUCLEAR WEAPONS

Russia's Request for the Export of U.S. Computers for Stockpile Maintenance

Statement for the Record by Mr. Harold J. Johnson, Associate
Director, International Relations and Trade Issues, National
Security and International Affairs Division



Mr. Chairman and Members of the Subcommittee:

This statement responds to your request that we obtain information on proposed exports of U.S. high performance computers to Russian nuclear weapons laboratories.

Specifically, you requested information on the policies affecting cooperation between the United States and Russia on nuclear warhead safety and security under a Comprehensive Test Ban Treaty (CTBT) and Russian officials' requests for access to U.S. high performance computer exports to conduct work under a CTBT.

The executive branch, pursuant to U.S. policy on cooperation with Russia, has held discussions with Russian Ministry of Atomic Energy (MINATOM) and other officials on the possibility of undertaking cooperative projects under a CTBT. Although no specific project plans have been developed or approved, Department of Energy (DOE) officials said that the boundaries for potential cooperative projects are that (1) they would be unclassified, and (2) they would not enhance performance of Russian nuclear weapons or contribute to Russian nuclear weapons design. These officials stated that any access to computers provided to Russian scientists will be consistent with current export control laws. The regulations implementing the law provide the executive branch the authority to deny a license for any item intended for research, development, design, manufacture, construction, testing, or maintenance of any nuclear explosive device or other sensitive nuclear activities. The United States is now seriously considering Russia's request for the export of U.S. high performance computers that are more powerful than those previously

exported to Russia. The proposed export raises issues about safeguards to ensure that U.S. policy is adhered to and that the computers are not being used for proscribed nuclear activities. In considering these issues, the United States must also consider whether or not Russia could develop or acquire high performance computers from other non-U.S. sources in the near future.

POLICIES AFFECTING U.S.-RUSSIAN STOCKPILE SAFETY AND SECURITY COOPERATION

On September 24, 1996, the United States, Russia, and several other countries signed a CTBT that prohibits any nuclear explosions. The United States supports a CTBT to prevent the improvement of existing nuclear arsenals and to constrain nuclear weapons proliferation. Since nuclear explosions are not permitted under a CTBT, the United States has embarked on a science-based stockpile stewardship program that uses past nuclear weapons test data, nonnuclear laboratory tests, and computer simulations to maintain confidence in the existing U.S. nuclear stockpile. It is U.S. policy to continue to maintain a nuclear deterrent against other countries with access to nuclear forces; the United States considers such a nuclear deterrent to be a supreme national interest.

While negotiating the CTBT, representatives from the United States and Russia discussed the possibility of scientific and technical collaboration on topics related to the safety and security of each country's stockpile under a CTBT. However, according to DOE officials,

the United States set boundaries for cooperation with Russia to ensure that the information exchange does not contribute to nuclear weapons design or enhance the military performance of Russian nuclear weapons. The United States restricted collaboration to unclassified subjects and materials and projects that would not enhance the performance of Russian nuclear weapons. Access to computers will be consistent with U.S. export control laws. In this context, it should be noted that the actual export of high performance computers is not required to conduct the collaborative efforts currently being discussed, according to a national laboratory official.

The executive branch announced a new export control policy on October 6, 1995, for high performance computers that is intended to focus controls on computers that have a significant impact on U.S. and allied security interests and eliminate controls that became unnecessary or ineffective due to rapid advances in computer technology. The policy allows the executive branch to deny export licenses for high performance computers to certain nuclear weapons states and other countries of proliferation concern, such as Russia, China, India, Pakistan, and Israel, when the computers (1) are intended for a military end user or an end user involved in proliferation activity and have a composite theoretical performance (CTP)¹ of over 2,000 million theoretical operations per second (MTOPS) or (2) are intended for a civilian end user and have a CTP of over 7,000 MTOPS. The policy retained the authority to deny export licenses for any item intended

¹Composite theoretical performance is used to estimate the maximum possible performance of a computer as measured in millions of theoretical operations per second.

for the research, development, design, manufacture, construction, testing, or maintenance of any nuclear explosive device or other sensitive nuclear technologies.

The policy was announced after the executive branch concluded that computers capable of a composite theoretical performance of up to 7,000 MTOPS would become widely available in international markets within the next 2 years. The executive branch set a lower export control limit of 2,000 MTOPS for military end users and end users of proliferation concern because, while these computers may be less controllable, the United States does not want to support proliferation or certain military efforts in these countries.

The policy also outlines a number of steps that the U.S. government may require of the exporter or the end user to safeguard computer exports. Among other things, the exporter or end user may be required to limit access to the computer or inspect computer logs and output. In addition, the end user may also be required to agree to on-site inspections by U.S. government or exporting company officials, who would review programs and software used on the computer, or to remote electronic monitoring of the computer.

RUSSIAN REQUESTS FOR HIGH PERFORMANCE COMPUTER EXPORTS

In the early summer of 1996, a MINATOM official expressed concern about U.S. export restrictions on high performance computers and requested that Russian and U.S. officials

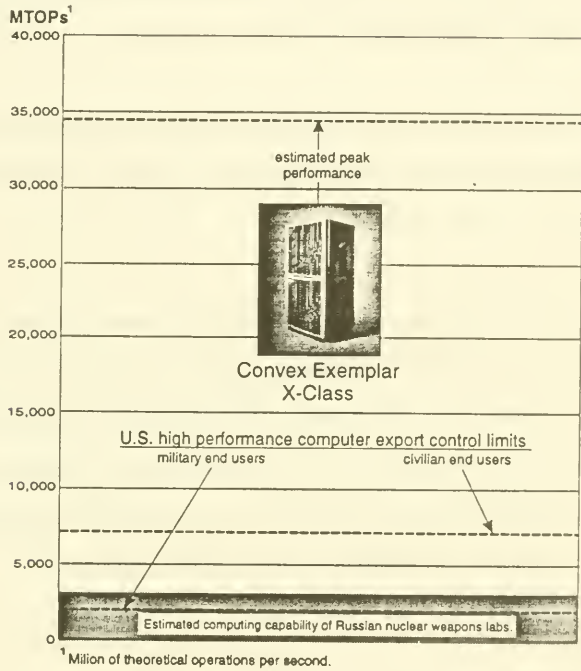
discuss the possible export of a Convex SPP 2000 computer. This computer is more capable than any computer known to be in use in Russia. This request is currently being considered by the United States, although the Commerce Department has not yet received an export license application for the computer. In considering this request, the United States asked MINATOM for additional information on how Russia planned to use the SPP 2000 computer and several other computers for which the executive branch was reviewing export license applications. The MINATOM official indicated that the SPP 2000 would be used to help maintain Russia's nuclear stockpile but that the other computers requested would be used for civilian purposes at Russian nuclear weapons laboratories. According to the manufacturer, the SPP 2000, now known as the Exemplar X-Class, can be configured with a maximum of 64 processors and has a maximum performance rating of 46,100 million floating point operations per second (or approximately 34,500 MTOPS).²

Our review of computer export data indicates that it is unlikely that Russian military and nuclear weapon laboratories have acquired computers capable of more than approximately 3,500 MTOPS, due to a lack of known sales of computers above that capability from the United States or Japan, the only countries currently producing computers above that level. Lawrence Livermore Laboratory officials told us that, the Russians currently have the capability to connect less powerful computers into a system with a capability greater than 3,500 MTOPS, but they did not know whether the Russians

²The computer industry measures computer performance in floating point operations per second. According to national laboratory officials, an MFLOP is roughly equal to .75 MTOP for multiprocessor computers.

had done this. Figure 1 shows a comparison of Russia's computing capabilities with the Convex Exemplar X-Class computer.

Figure 1: Comparison of Russian Computing Capabilities With the Convex Exemplar X-Class Computer.



ISSUES REGARDING THE EXPORT OF HIGH PERFORMANCE
COMPUTERS TO RUSSIA

Under current export control regulations, the United States could choose to approve the export of high performance computers to Russia with a computer safeguard security plan. According to some national laboratory officials, implementing a rigorous safeguard plan would require personnel experienced in nuclear weapons work to identify the types of programs being run on the computer. These officials said that some civilian computer programs are similar to nuclear weapons programs.

Within this context, the proposed export of high performance computers to Russian nuclear weapons laboratories raises several questions the Congress and the executive branch may wish to consider.

- How will the executive branch determine whether the export of high performance computers to Russian nuclear weapons laboratories is in the U.S national security interest, taking into account (1) U.S. support for the CTBT and (2) the executive branch's boundaries on nuclear weapons safety and security collaborations with Russia to ensure that such efforts do not enhance the military performance or contribute to the design of Russian nuclear weapons?

- If the United States were to approve the export of any computers to Russian nuclear weapons laboratories for civilian end uses, how would the United States devise a computer safeguard plan that could detect the possible diversion of the computers from civilian end uses to proscribed nuclear weapons activities?
- Could Russia develop or acquire computers with similar capability to those they are requesting from non-U.S. sources in the near future?

This concludes our statement for the record.

(711192)

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Military Procurement, Committee
on National Security, House of Representatives

Statement submitted
on September 26, 1996

DOE SECURITY

Information on Foreign
Visitors to the Weapons
Laboratories

Statement for the Record by
Bernice Steinhardt, Associate Director,
Energy, Resources, and Science Issues,
Resources, Community, and Economic
Development Division



Mr. Chairman and Members of the Subcommittee:

We appreciate the opportunity to provide this statement for the record about unclassified visits by foreign nationals to the Department of Energy's (DOE) nuclear weapons laboratories—the Lawrence Livermore National Laboratory in California and the Los Alamos National Laboratory and the Sandia National Laboratories in New Mexico. As agreed with your staff, this statement responds to the Committee's directive dated May 7, 1996,¹ and provides (1) a comparison of the foreign visitors to DOE's weapons laboratories over the last several years with the 1986-87 foreign visitor levels we reported in 1988;² (2) the number of visitors to these laboratories who were from countries DOE has designated as "sensitive" because of national security, terrorism, regional instability, or nuclear proliferation concerns; and (3) the major changes that have occurred in the requirements for controlling visitors' access to the laboratories over the last several years.

In summary, the information we have obtained shows that the number of foreign visitors to DOE's nuclear weapons laboratories is increasing. From January 1993 through June 1996, approximately 5,900 foreign visits to the weapons laboratories occurred annually on average. This is a 55 percent increase over the 3,800 foreign visits on average that occurred annually during 1986 and 1987. This upward trend is continuing; the average annual number of foreign visitors has increased steadily over the last few years. Moreover, the number of visitors from sensitive countries has also increased, and at a faster rate than the number from other countries. The average annual number of visitors from sensitive countries during 1993 through 1996 was 1,679, or more than 225 percent greater than the annual average of 513 visitors from sensitive countries during 1986 and 1987. Finally, the requirements for allowing foreign visitors into the laboratories have changed. Among other things, headquarters has delegated to DOE's laboratories greater

¹The directive is contained in the House Committee on National Security's report on H.R. 3230 (Report 104-563, May 7, 1996).

²Nuclear Nonproliferation: Major Weaknesses in Foreign Visitor Controls at Weapons Laboratories (GAO-RCED-89-31, Oct. 11, 1988).

authority to approve foreign visitors to nonsensitive areas than was the case in 1988. In addition, requirements for background checks have changed. In 1988, all visitors from communist countries required background checks regardless of the purpose of the visit. Currently, at some laboratories, background checks are only required for visitors from sensitive countries—which include most of the countries designated as communist in 1988—who will be visiting secure areas or discussing sensitive subjects.

BACKGROUND

The Lawrence Livermore, Los Alamos, and Sandia National Laboratories conduct research and development for DOE's nuclear weapons program and other classified activities related to defense and energy issues. These laboratories also conduct a wide range of unclassified activities that do not have weapons applications, such as applied environmental technologies, solar and geothermal energy, transportation technologies, and nuclear safety. Because of these broad activities, a policy of more openness and international cooperation, and/or the need for specialized expertise, DOE allows substantial numbers of foreign visitors access to these laboratories.³ Access by foreign visitors to the laboratories can be for either visits (up to 30 days) or assignments (over 30 days but less than 2 years) to participate in workshops or hold technical discussions, contribute to specific research projects, or work on laboratory research and development activities. In addition, some foreign nationals are hired by the laboratories as employees; they are also considered foreign visitors.

In 1988, we issued a report that detailed a number of problems with DOE's controls over foreign visitors to these facilities. These problems included inadequate prescreening of foreign visitors, poor identification and review of visits that could involve potentially sensitive subjects, and insufficient practices for approving, monitoring, and reporting

³DOE defines a foreign visitor as any person who is not a U.S. citizen, including individuals who are permanent resident aliens.

foreign visits. In response, DOE revised its control procedures to require that necessary background checks be completed before access to the laboratories is granted and established a DOE-wide foreign visitor reporting and tracking system to better oversee this activity. More recent events, including dramatic changes in the nuclear arms race, the demand for technology to solve massive environmental problems, and the international competition facing U. S. industry, have caused many to reexamine the roles of the laboratories. As a result, the roles of the weapons laboratories have been changing and becoming more diversified. DOE is studying the security implications of the changing role of the laboratories and of foreign visitors to these laboratories.

NUMBER OF VISITORS TO THE WEAPONS LABORATORIES

Substantial numbers of foreign visitors are allowed access to the weapons laboratories each year, and the number of these visitors is increasing. On the basis of data contained in our 1988 report, DOE averaged about 3,800 foreign visitors annually to the weapons laboratories during 1986 and 1987. Since 1993, the number of foreign visitors to these laboratories has averaged almost 5,900 annually—an increase of 55 percent. Furthermore, the number of foreign visitors is continuing to rise. During 1993, over 5,000 foreign visitors entered the weapons laboratories; in the following year, this number increased to almost 6,000, and in 1995 the total number of foreign visitors was over 6,200. The number of foreign visitors during the first half of 1996 totaled over 3,350. If that rate is maintained, the number of foreign visitors for 1996 will be over 6,700.

Appendix I contains information on the number of visitors to the laboratories. Figure I.1 compares the average annual number of foreign visitors to the laboratories during the periods 1986 through 1987 and 1993 through 1996. Figure I.2 provides the number of foreign visitors to each laboratory during 1993 through 1996.

NUMBER OF VISITORS FROM SENSITIVE COUNTRIES

Certain countries have been designated by DOE as sensitive because of concerns about national security, terrorism, regional instability, or nuclear proliferation concerns.⁴ The number of visitors to the weapons laboratories from these sensitive countries is increasing at a faster rate than visitors from nonsensitive countries. During 1986 and 1987, an average of 513 foreign visitors from sensitive countries were allowed access to the laboratories each year. However, during the period from 1993 through 1996, that average rose to 1,679 visitors from sensitive countries annually—an increase of over 225 percent. Most of these foreign visitors came from China, India, Israel, Taiwan, and the states of the former Soviet Union. Individuals from these countries account for 5,476 (93 percent) of the 5,878 visitors from sensitive countries to the weapons laboratories since 1993.

Appendix II contains details on the visitors from sensitive countries to the weapons laboratories. Figure II.1 shows a comparison of the average annual number of visitors from sensitive countries during the periods 1986-87 and 1993-96. Figure II.2 compares for the two periods the average annual number of visits from the sensitive countries that had the most visitors. Table II.1 details the number of visitors from each sensitive country during 1993-96.

MAJOR CHANGES IN THE REQUIREMENTS FOR ALLOWING ACCESS TO LABORATORIES BY FOREIGN VISITORS

⁴DOE previously designated countries of concern as either communist or sensitive. All countries of concern are now identified as sensitive countries.

DOE has always controlled foreign visitors' access to the weapons laboratories. These controls for unclassified foreign visits are set forth currently in DOE Order 1240.2B. That order, among other things, describes the responsibilities of each organization involved in foreign visits and details the process that must be used to allow access by foreign visitors to the laboratories. Two of the key controls contained in the order are the (1) visit approval requirements and (2) background checks of foreign visitors. Both of these controls have changed since our 1988 report.

DOE has delegated to the laboratories a significant part of the authority to approve foreign visitors to the laboratories. Previously, DOE reviewed and approved all visits to secure areas, visits involving sensitive subjects, high-level foreign officials, all visits involving foreign nationals from sensitive countries, and all assignments regardless of country of origin. DOE headquarters offices previously held much of this approval authority. Currently, DOE headquarters approves visits involving visitors from sensitive countries to secure areas and concurs with DOE field office decisions on visits involving sensitive subjects and high-level foreign officials. All other approval authority has been fully delegated to the DOE field offices. This authority has been further delegated to the laboratories. Consequently, the laboratories now approve all visits that do not involve high-level foreign visitors, sensitive subjects, or secure areas. At Los Alamos, for example, the laboratory approved 94 percent of its foreign visitors in 1995. Appendix III provides a comparison of the past and current authorization levels for approving foreign visitors.

The requirements for background checks have also changed. Previously, DOE required background checks for visits (up to 30 days) and assignments (more than 30 days) to secure areas by foreign nationals from sensitive countries and all visitors from communist countries.⁵ DOE currently requires background checks for foreign nationals

⁵ At Livermore, background checks were required on all assignments regardless of country of origin.

from sensitive countries who are on assignments or on visits involving secure areas or sensitive subjects. However, because of an exemption that DOE granted to Los Alamos and Sandia, background checks at these laboratories are required only for visits by foreign nationals that involve access to secure areas or a sensitive subject. At Livermore, background checks on visitors from sensitive countries who are on assignments are still required.

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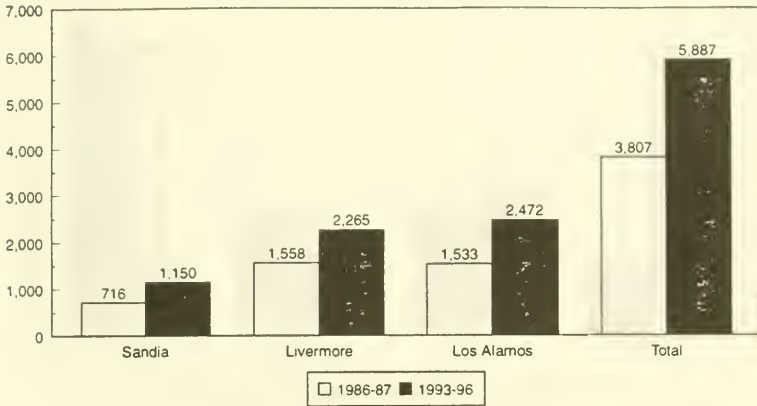
This concludes our statement for the record.

APPENDIX I

APPENDIX I

ALL FOREIGN COUNTRIES: VISITS AND ASSIGNMENTS
TO DOE WEAPONS LABORATORIES

Figure J.1. Average Annual Foreign Visits and Assignments to DOE Weapons Laboratories,
Calendar Years 1986-87 and 1993-96

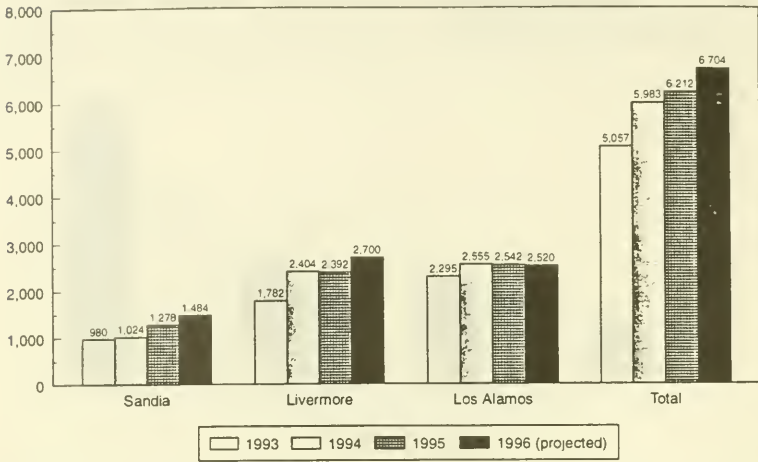


Sources: Office of Personnel and Information Security, Los Alamos; Foreign National Visits and Assignments Office, Livermore; Safeguards and Security Special Projects Team, Sandia.

APPENDIX I

APPENDIX I

Figure I.2: Foreign Visits and Assignments to DOE Weapons Laboratories, January 1993-June 1996

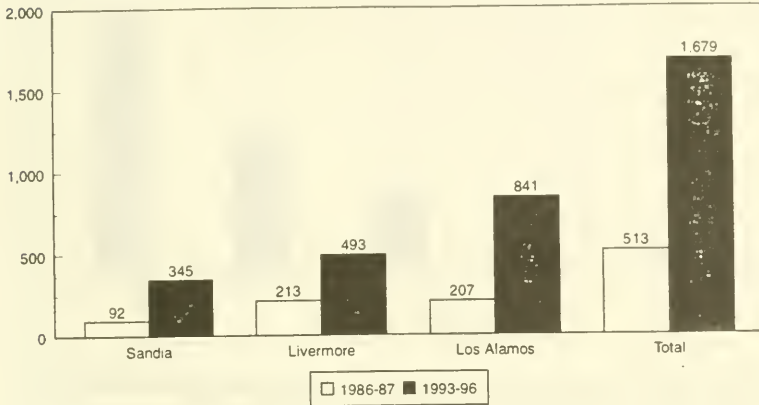


Note: Projected totals for 1996 are based on 6-month actual totals (Los Alamos--1260; Livermore--1350; Sandia--742).

Sources: Office of Personnel and Information Security, Los Alamos; Foreign National Visits and Assignments Office, Livermore; Safeguards and Security Special Projects Team, Sandia.

SENSITIVE FOREIGN COUNTRIES: VISITS AND ASSIGNMENTS
TO DOE WEAPONS LABORATORIES

Figure II.1: Sensitive Foreign Countries: Average Annual Visits and Assignments to DOE Weapons Laboratories, Calendar Years 1986-87 and 1993-96

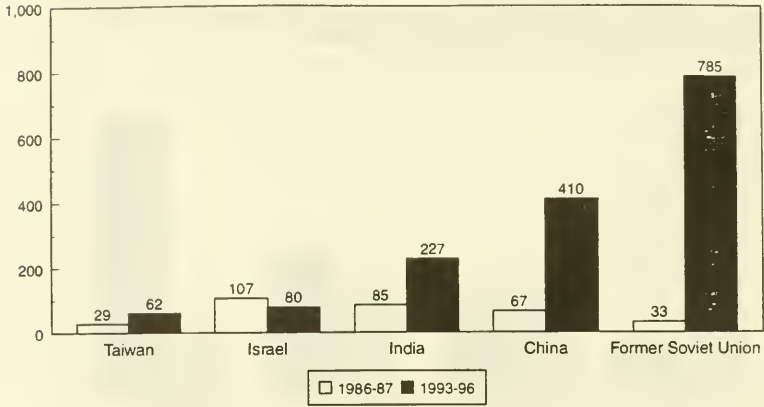


Sources: Office of Personnel and Information Security, Los Alamos; Foreign National Visits and Assignments Office, Livermore; Safeguards and Security Special Projects Team, Sandia; Office of International Technology Cooperation, DOE headquarters.

APPENDIX II

APPENDIX II

Figure II.2: Sensitive Foreign Countries with the Highest Average Annual Visits and Assignments to DOE Weapons Laboratories, Calendar Years 1986-87 and 1993-96



Sources: Office of Personnel and Information Security, Los Alamos; Foreign National Visits and Assignments Office, Livermore; Safeguards and Security Special Projects Team, Sandia; Office of International Technology Cooperation, DOE headquarters.

APPENDIX II

APPENDIX II

Table II.1: Visitors From Sensitive Countries to DOE Weapons Laboratories, Jan. 1993--
June 1996

Sensitive country ^a	1993	1994 ^b	1995	Jan.-June 1996	Total
Algeria	5	7	5	3	20
Argentina	20	6	-	-	26
Brazil	21	18	-	-	39
Bulgaria	4	10	-	-	14
Burma	1	0	-	-	1
Cambodia	1	0	-	-	1
Chile	6	4	-	-	10
China	235	525	442	232	1,434
Cuba	0	1	3	0	4
El Salvador	1	0	-	-	1
Ethiopia	3	3	-	-	6
India	126	245	256	168	795
Iran	13	21	25	10	69
Iraq	0	4	3	1	8

^aIn addition, North Korea and Sudan are sensitive countries but did not have visitors to the laboratories during 1993-96.

^bAs of July 28, 1994, the following countries were no longer considered sensitive: Argentina, Brazil, Bulgaria, Burma, Cambodia, Chile, El Salvador, Ethiopia, Romania, South Africa, South Korea, Vietnam, and Yugoslavia.

APPENDIX II

APPENDIX II

Israel	69	88	73	51	281
Libya	0	1	1	0	2
Pakistan	3	11	7	3	24
Romania	5	8	-	-	13
So. Africa	10	7	-	-	17
So. Korea	63	40	-	-	103
Fr.Soviet.U ^c	760	705	797	486	2,748
Syria	0	1	2	4	7
Taiwan	47	64	73	34	218
Vietnam	0	5	-	-	5
Yugoslavia	26	6	-	-	32
Total	1,419	1,780	1,687	992	5,878

^cThe countries making up the former Soviet Union include Armenia, Azerbaijan, Belarus, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan. Estonia, Latvia, and Lithuania are nonsensitive countries.

Sources: Office of Personnel and Information Security, Los Alamos; Foreign National Visits and Assignments Office, Livermore; Safeguards and Security Special Projects Team, Sandia; Office of International Technology Cooperation, DOE headquarters.

APPENDIX III

APPENDIX III

COMPARISON OF PAST AND CURRENT AUTHORITY
TO APPROVE FOREIGN VISITORS

Type of visit	DOE headquarters	DOE field office	Laboratories		
			LLNL	LANL	SNL
1988 Approval authority					
High-level foreign officials	X				
Discussion of sensitive subjects	X				
Visits/assignments to secure areas					
From sensitive countries	X				
From nonsensitive countries		X			
Assignments to nonsecure areas					
From communist countries ^a	X				
From other sensitive countries		X			
From nonsensitive countries		X			
Visits to nonsecure areas					
From sensitive countries		X			
From nonsensitive countries			X	X	X
1996 Approval authority					
High-level foreign officials		X ^b			
Discussion of sensitive subjects		X ^b			
Visits/assignments to secure areas					
From sensitive countries	X				
From nonsensitive countries		X			
Assignments to nonsecure areas					
From sensitive countries			X	X	X
From nonsensitive countries			X	X	X
Visits to nonsecure areas					
From sensitive countries			X	X	X
From nonsensitive countries			X	X	X

^aDOE's 1988 foreign visitor controls made a distinction between communist and other sensitive countries. DOE no longer makes such a distinction.

^bDOE headquarters must concur with DOE field office approval of these visits.

(302199)

[The following questions and answers were submitted for the record:]

WORKFORCE/PERSONNEL ISSUES

A safe, secure, reliable nuclear stockpile depends upon maintenance of a cadre of skilled, highly-motivated personnel. Concerns have been raised, however, regarding DOE's inability to retain and recruit such individuals.

Question 1. Do you agree with the conclusions of a Livermore study that "the laboratories have serious concerns about their ability to maintain U.S. capability in nuclear weapons research, and to maintain the skilled workforce necessary for this work? If not, why not?

Answer. Yes, we agree with this conclusion. This is one of the major issues that our Science-Based Stockpile Stewardship program addresses. Through this program, we expect to be able to retain and recruit a skilled workforce that can maintain our nuclear weapon stockpile, in the absence of underground nuclear testing. We will do this by developing enhanced experimental and computational capabilities which will keep existing skills sharp and train new staff. In addition, the laboratories have programs that allow postdoctoral students to further their research by working at the laboratories.

Question 2. Do you agree that this statement or concern applies to the workforce at the weapons production plants? Why or why not?

Answer. Yes. Continuing production activities occurring at the Department's weapons production plants help to maintain production capability and retain the necessary personnel while decreasing the total number of personnel over time. These activities include weapon surveillance, maintenance and repair, limited life component exchange, disassembly activities, as well as activities performed under the Department's Process Development Program and related Advanced Design and Production Technology activities. The Department has a continued awareness of the need to maintain, within our production personnel, the appropriate mix of skills and proficiency required to support the weapons complex. To that end, in FY 1997, consistent with congressional direction and subject to congressional approval, the four production plants will be establishing fellowship programs. We will continue to assess and meet these needs as required workloads change.

Question 3. If you agree that this is a problem at either the labs or production facilities, what steps is the Department taking to remedy this problem? What explains the length of time it has taken the Department to react?

Answer. The Stockpile Stewardship Program, if funded at recommended levels, will provide an intellectually stimulating program of scientific and engineering challenges to maintain the necessary skills and recruit top new people at both the production facilities and the labs. With this program in place, we do not anticipate problems associated with recruiting top quality personnel for career assignments for either tasks requiring skills generally available in the marketplace or for tasks that require special training.

DIFFICULTIES IN MAINTAINING THE U.S. NUCLEAR STOCKPILE IN THE ABSENCE OF NUCLEAR TESTING

In the past the United States has been able to test nuclear weapons to determine the effects of design changes meant to enhance the safety, security or reliability of its nuclear weapons arsenal. An absence of testing will reduce the confidence in the understanding of such changes. The "Science-Based Stockpile Stewardship and Management Program" was initiated to compensate for the loss of confidence resulting from an end to testing.

Question 5. What are some of the factors that contribute to the difficulty in maintaining confidence in a safe, secure, and reliable nuclear testing?

Answer. Our confidence in the safety, security, and reliability of the nuclear weapons stockpile has always been based on the judgement of nuclear weapon scientists and engineers. Their judgement is based, in large part, on the experience they gained through nuclear testing. In order to maintain our confidence in the safety, security, and reliability of the stockpile, these scientists and engineers, both current and future, must find alternative ways to validate their judgements in the absence of nuclear testing. The Stockpile Stewardship and Management Program will provide the nuclear weapon scientists and engineers with the tools and facilities to develop and validate their judgements in the absence of nuclear testing.

Maintaining confidence in the stockpile is also made more difficult because of our aging weapons. Stockpile weapons were not designed to compensate for significant changes in material properties due to aging because we expected to replace them

with new more modern weapons. The potential problems resulting from our aging weapons is also being addressed by the Stockpile Stewardship and Management Program.

Question 6a. How important is the issue of "aging weapons"?

Answer. "Aging weapons" is a very important issue. Every weapon contains organic, inorganic, and special nuclear materials exhibiting unique behavior. In addition, these materials are continually exposed to nuclear radiation. Individually, each component is subject to aging and environmental exposure. The collective impact of all of these age-induced changes is of great concern. It is important we understand the rate at which these changes occur and the impact the changes have on the performance of the weapon, especially now that the weapons are scheduled to remain in the stockpile for an indefinite period of time. Our current view is that each weapon component will eventually need to be replaced. The new Stockpile Life Extension Program addresses an appropriate replacement schedule.

Question 6b. How long were our weapons designed to remain in the stockpile, and how long under DOE's plan will they remain in the stockpile?

Answer. The requirement for many nuclear weapons was to have a useful life of about 20 years. However, most of the stockpiled weapons were replaced by new and improved weapon designs before they reached the end of their anticipated life. Consequently, we do have limited experience with aging weapons. Present plans include the retention of most warhead types indefinitely by developing and implementing the Stockpile Life Extension Program.

Question 6c. What problems does this pose?

Answer. Maintaining weapons in the stockpile indefinitely presents two basic challenges. One challenge is to be able to predict aging problems far enough in advance to be able to correct them in a timely manner. We have started a new program, the Enhanced Surveillance Program, to address these issues. The second challenge is to maintain a nuclear weapons complex that has the capability and capacity to respond in a timely fashion to stockpile problems once they are detected. The Stockpile Life Extension Program and the Advanced Design and Production Technologies Program, have been initiated recently to address these problems.

Question 6d. Has previous experience with stockpile aging provided any early data on whether this process leads to rapid, significant, moderate or marginal degradation of a weapon's capability?

Answer. Our experience with aging stockpiled weapons is limited. We are currently assessing available data to identify information that can be extracted with respect to stockpile vulnerabilities from aging. However, our previous experience indicates that a precipitous failure would be preceded by early warning signs. The Enhanced Surveillance Program, begun in fiscal year 1996, will provide information to address these issues.

Question 7a. How will the Stockpile Stewardship and Management Program help the Department to maintain confidence in the safety, security and reliability of the nuclear weapons stockpile?

Answer. The Stockpile Stewardship and Management Program will provide the nuclear weapon scientists and engineers with the tools and facilities to develop and validate their judgements in the absence of nuclear testing. Facilities such as NIF and DARHT, subcritical experiments at the NTS, and advanced modeling resulting from ASCI will advance those areas of nuclear weapons science that are now incomplete. The Stockpile Stewardship and Management Program simulations will help train the next generation of scientists and engineers who must make judgements on the safety, security and reliability of the nuclear weapons stockpile.

Question 7b. In this regard, how important is the concept of dual lab validation of the safety, security and reliability of an individual warhead?

Answer. Validation of the safety, security, and reliability of individual weapons by two independent laboratory teams is a very important concept. The laboratory teams have developed unique codes and approaches to the design, validation, and certification of weapons. Subjecting a Stockpile weapon to review by two teams significantly increases our confidence in the judgements and evaluations of the weapon designers.

RISKS AND UNCERTAINTIES ASSOCIATED WITH STOCKPILE STEWARDSHIP AND MANAGEMENT

The Department concedes that there are significant risks and uncertainties associated with the President's decision to sign a Comprehensive Test Ban Treaty. The DOE's Stockpile Stewardship and Management Program is intended to minimize any such risks by increasing confidence in being able to predict the consequences of possible changes to known design capabilities. It will also do so by maintaining

a cadre of trained scientists and engineers to make remedial changes when required.

Question 8. What do you see as the risks and uncertainties associated with the Stockpile Stewardship and Management Program? How can these risks be mitigated?

Answer. The uncertainty associated with the Stockpile Stewardship and Management Program (SS&MP) is whether we can continue to certify annually that the stockpile is safe, secure and reliable in the absence of underground testing. The risk associated with this uncertainty will be reduced by ensuring that the elements of the SS&MP, such as above ground experiments (NIF, DARHT, etc.), enhanced surveillance, subcriticals, and advanced modeling/ASCI, are completed as currently scheduled, and by demonstrating our ability to rebuild certifiable warheads in the stockpile.

Question 9. How confident are you that stable funding, a prerequisite for a successful program, will be forthcoming? What is the status of your efforts to gain OMB concurrence to a budget for DOE/Defense Programs of \$4 billion per year? If such sustained funding is not forthcoming, does the Department have a view as to how it would establish priorities among competing programs?

Answer. We continue to work closely with the Office of Management and Budget to define realistic outyear budget requirements. A key factor in this process will be the development of effective funding profiles for implementing well defined and integrated program strategies. We are confident that adequate funding will be provided to meet this essential national security need.

Question 10. How confident are you that the tremendous advances in diagnostic and computational technologies necessary will in fact occur? What is the basis for your level of confidence?

Answer. The state-of-the-art diagnostic and computational technologies and their supporting technologies, such as computer technologies, and microelectronics, continue to advance at a tremendous rate. By using surveillance and current non-nuclear and previous nuclear test data, we will perform detailed computer simulations. We anticipate that continued rapid advances in sensor and computation technologies will occur based on an extrapolation of past development rates. We have confidence in this technology to support the weapons program in the future.

Question 11. How important are costly, "big science" projects such as the National Ignition Facility (NIF) to the success of the Program? In your judgment, how likely is it that the NIF will be funded to completion?

Answer. NIF would provide a unique capability for the DOE's science-based stewardship of the nuclear weapons stockpile. The goal of obtaining fusion ignition and burn would attract and challenge top scientific and engineering talent with a problem containing many of the same elements of physical understanding as those necessary for stewardship of the nuclear stockpile. Planned experiments with NIF, at temperatures and pressures near those that occur in nuclear detonations, would provide the data needed to verify certain aspects of sophisticated computer models. These models are needed to simulate weapons physics and to provide insights on the reliability of the Nation's nuclear weapons stockpile. Specially designed NIF experiments could also assess specific issues of modeling or physics that are of concern because of changes in weapons due to aging or remanufacture. Finally, NIF experiments could provide a unique source of radiation for studies on nuclear weapon effects.

As a multipurpose facility, NIF would also be important to the Nation's energy, basic science, and technology missions. Its data would determine whether Inertial Confinement Fusion can be a viable source of electric power in the future. Achieving ignition, optimizing the various target gain curves, and providing initial data on fusion reactor materials would allow sound decisions to be made concerning inertial fusion energy development.

NIF experiments would also achieve the same temperatures and pressures that exist in the sun and other stars, providing new laboratory capabilities for exploring basic high-energy-density sciences such as astrophysics and plasma physics. As the world's largest optical instrument, NIF could spur high technology industries in such areas as optics, lasers, materials, high-speed instrumentation, semiconductors, and manufacturing.

Question 12. Do you see any risks in getting the scientists at the weapons laboratories more involved in production-related activities? Doesn't production go against the grain of the lab culture?

Answer. Today, scientists and engineers at the laboratories work in research, development, and production. These scientists and engineers have always worked with production facilities to fabricate their designs. In the future the relationship between the labs and the production facilities will be even closer. The Stockpile Stew-

ardship and Management Program will involve these scientists and engineers in new production activities such as Advanced Design and Production Technology which will strengthen our ability to maintain the stockpile both at the labs and at the production sites. The laboratories are adaptive to meet the needs of the weapons program. Their culture is changing and creating optimism and new challenges.

Question 13. Some have argued that a "surveillance and manufacturing" only approach would both be less expensive and ultimately more effective to manage the stockpile. Why has the Department rejected such an approach?

Answer. A "surveillance and manufacturing" approach implies that DOE should only attempt to find existing defects in the stockpile and then fix the problem. However, our goal is to minimize the amount of time a failure exists in the stockpile, therefore, we are pursuing a strategy of enhanced surveillance plus life extension. In this strategy we will use age sensitive models in simulations to forecast the deterioration of materials, components and systems with age. Using advanced diagnostics and sensors we will strive to detect stockpile problems at the earliest possible time and initiate corrective actions through our Life Extension Program. Other elements of the Stockpile Stewardship and Management Program such as modeling and above ground experiments will be used to establish the urgency of an apparent problem. In this way we actively focus our industrial capacity on our highest priority work.

SAFETY AND RELIABILITY OF THE STOCKPILE TODAY

Administration officials assert that the U.S. nuclear stockpile today is safe, secure, and reliable. The Committee should seek to understand the basis for the Administration's stated confidence.

Question 14a. On what basis has the administration concluded that the nuclear stockpile is safe, secure, and reliable?

Answer. On August 11, 1995, the President announced that the U.S. intended to seek a zero yield Comprehensive Test Ban Treaty. As part of that announcement, the President required a new three-pronged review process for annual certification of the safety and reliability of the stockpile. That process is expected to lead to a recommendation by the Secretaries of Defense and Energy that the stockpile is currently judged to be safe and reliable, and that there is no need for underground nuclear testing at the present time.

The methodology used in making the evaluation has the following three elements:

(1) Through a formal DOE release and DOD acceptance process, each weapon in the stockpile was certified to be safe and reliable in accordance with its military characteristics and stockpile to target sequence established by DOD when it originally was accepted into the stockpile. This certification required evaluation of the weapon's performance against classified quantitative criteria for safety, reliability, yield, and environmental exposures specific to each weapon type.

(2) After being accepted as a stockpile weapon, each weapon has been subjected to an ongoing rigorous schedule of DOE surveillance tests and DOD tests and inspections. Occasionally, these tests find problems, which are corrected to maintain confidence in the weapon's safety and reliability.

(3) This year's annual certification process has evaluated data from the original certification, including the associated underground nuclear tests and other physics and engineering evaluations, all available surveillance and inspection data, as well as any updated calculations performed for safety or reliability evaluations made subsequent to the weapon's entry into the stockpile or as a result of weapon modifications.

Based on these considerations and reviews by the DOE nuclear weapons laboratories, the NWC, and STRATCOM, we expect to conclude that the stockpile is currently certifiable without nuclear tests.

Question 14b. Do all U.S. warheads include modern safety features such as insensitive high explosives and fire-resistant pits? Why shouldn't the U.S. undertake to incorporate modern safety features on all U.S. nuclear weapons?

Answer. All warheads in the enduring stockpile have electrical nuclear detonation safety features. All warheads, however, do not have insensitive high explosives or fire-resistant pits. Notwithstanding, all warheads in the enduring stockpile are judged to be safe and to meet the nuclear detonation safety standards.

Backfit or redesign and production of these warheads to include additional safety features is handled on a case basis. All warhead types in the enduring stockpile are evaluated by the Department of Energy (DOE) and its weapons laboratories with respect to the adequacy of their safety features. The most recent evaluation was conducted in late fiscal year 1996 in support of our annual certification of the stockpile.

If warranted in the future, DOE, working with the Department of Defense (DOD), will recommend operational changes or weapon system changes to provide continued assurance that the stockpile is adequately safe.

Question 14c. Does the Department have the same confidence level in each warhead type?

Answer. The confidence level varies with warhead type and is based on results of the surveillance tests for each warhead type.

Question 15a. Please describe the process used in the most recent certification of the stockpile—the new process established by the President in his August 11, 1995, announcement.

Answer. After issuance of the requirement for annual certification by the President, on August 11, 1995, a three-prong review was established. The Department of Energy's (DOE) weapons laboratories prepared their assessments of stockpile safety and reliability, which were summarized in letters from the directors of the DOE weapons laboratories to the Secretaries of the Energy and Defense. The U.S. Strategic Command held several reviews of weapon safety and reliability, culminating in a letter from the Commander, U.S. Strategic Command, to the Secretary of Defense. The Nuclear Weapons Council is currently reviewing the advice received from the DOE laboratories and the joint (Department of Defense-DOE) project officers groups for the respective weapon system. After completion of the Nuclear Weapons Council process, the Secretaries of Defense and Energy will be advised. Their joint determination that the stockpile is safe, secure, and reliable, will complete the process.

Question 15b. Has the Secretary of Energy issued a determination to the President regarding the safety and reliability of the stockpile?

Answer 15b. The Presidential requirement is for both the Secretaries of Energy and Defense to determine jointly, on the basis of advice received from the directors of the DOE weapons laboratories, the Commander of U.S. Strategic Command, and the Nuclear Weapons Council, the safety, security, and reliability of the stockpile. As of October 1996, the Nuclear Weapons Council has not completed their review.

STOCKPILE SURVEILLANCE AND TESTING

A recent GAO report criticized the Administration for failing to perform "all the (surveillance) tests it believes are necessary to ensure the reliability of the nuclear weapons in the stockpile. For some weapons, the tests are far behind schedule and DOE's confidence in the reliability of those weapons is diminished . . . Although DOE plans to get some tests back on schedule within a few years, other tests will not be back on schedule for the foreseeable future."

Question 16. What is your reaction to the recent GAO report criticizing the Department for not performing all the surveillance tests DOE believes are necessary to ensure the reliability of the stockpile?

Answer. The Department concurs with the GAO recommendations stated in the report. A plan is being developed that will demonstrate full recovery of stockpile surveillance testing consistent with programmatic requirements. Working with our DOD customer, we will then implement corrective actions that are consistent with available DOE and DOD resources.

Question 17. What is the Department's plan to fix these problems? When will this test program get back on schedule?

Answer. A plan is being developed that will demonstrate full recovery of stockpile surveillance testing consistent with programmatic requirements. The plan being prepared will identify the potentially vulnerable areas of the stockpile. Working with our DOD customer, we will then implement corrective actions that are consistent with available DOE and DOD resources.

Question 18. Based on surveillance experience, can we develop varied surveillance patterns for each different type of warhead? Would more frequent examinations for some where warranted, and less frequent for other when possible, not allow for a better allocation of scarce resources?

Answer. The Surveillance Program is designed and evaluated on a weapon-by-weapon basis. The selection of test quantities provides statistically sound, fact-based reliability assessments for weapons systems. Commonalities between weapon systems, as well as test histories, are considered in the formulation of the testing program.

CONDUCT OF "SUBCRITICAL" EXPERIMENTS AT THE NEVADA TEST SITE

DOE recently announced that Secretary O'Leary had decided to postpone important "subcritical" nuclear weapons explosive tests at the Nevada Test Site. Subcritical experiments are useful in determining and validating the hydrodynamic prop-

erties of weapons materials which may be made by differing manufacturing processes in the future compared to the manner in which they were produced for the existing stockpile (for example, the historical wrought versus the new cast plutonium process for fabrication of the weapon primary—the “pit”). This marked the second time in four months that DOE postponed such tests. DOE claims that the reason for postponing these tests was to ensure that no environmental damage would result.

Question 24. When will a subcritical test be performed? What is the schedule for future experiments?

Answer 24. A subcritical experiment could be performed about eight to ten weeks after the issuance of the Record of Decision for the Nevada Test Site Environmental Impact Statement (EIS) if a decision is made to go forward with these experiments in a Record of Decision (ROD). The Nevada Test Site EIS was released to the public on October 8, 1996. The ROD can be issued no sooner than 30 days after October 18, 1996, the date the final EIS was published in the Federal Register.

Question 25. What environmental documents have to be completed in order for the Department to conduct subcritical experiments and when will they be released?

Answer 25. The only environmental document which must be completed before a subcritical experiment could be conducted is the Record of Decision for the final Nevada Test Site Environmental Impact Statement (EIS). The Nevada Test Site EIS was released to the public on October 8, 1996. The ROD can be issued no sooner than 30 days after October 18, 1996, the date the final EIS was published in the Federal Register.

MAINTAINING NUCLEAR TEST READINESS

DOE originally planned to maintain a capability to conduct an underground nuclear test at the Nevada Test Site (NTS) within six months of a decision by the President to proceed. DOE recently revised this policy, however, apparently embracing instead a 36-month test readiness posture.

Question 27. How do the aforementioned subcritical experiments contribute to the Department's ability to maintain nuclear test readiness?

Answer. There are several elements in the Department's approach to maintaining the site, facilities, equipment, and skilled personnel required for nuclear testing, should the need arise. Subcritical experiments are a key element in maintaining the site since, by their very nature, they exercise, in a scientifically productive manner, many of the operational aspects of an underground nuclear test. Of the functional areas that have been identified as critical to the ability to conduct a nuclear test, i.e., arming and firing, timing and control, diagnostic instrumentation emplacement, energy containment, etc., the subcritical experiments would utilize equipment and skills very similar to those needed for underground nuclear testing. While it may be possible to develop and exercise those capabilities with mock activities, the subcritical experiments would provide a more realistic exercise of those capabilities, in addition to providing important technical data for Stockpile Stewardship.

Question 28. What actions are required to maintain a capability to resume testing at the NTS on a six month time frame rather than a 36 month time frame?

Answer. It is not practical to maintain the capability to resume testing at the Nevada Test Site (NTS) within a six-month time frame. During the peak of the underground testing program it took from 12 to 24 months to conduct a nuclear test from inception to execution. When stockpile questions required a nuclear test on short notice, an existing test (already 12 to 18 months along in preparation) was adapted to the new requirement. This allowed the test to be conducted within approximately six months of the need being identified. Since there is no on-going underground nuclear test program, a six-month capability is not practical.

Question 29. Does the Department have a specific plan to enhance the nuclear test readiness posture (e.g., move to a six month test readiness posture)? If so, what is it and how much would it cost to implement? If not, when will the Department develop such a plan?

Answer. No. The Department has no plans to move towards or develop a six month test readiness posture. It is not practical to maintain the capability to resume testing at the Nevada Test Site (NTS) within a six month time frame. During the peak of the underground testing program it took from 12 to 24 months to conduct a nuclear test from inception to execution. When stockpile questions required a nuclear test on short notice, an existing test (already 12 to 18 months along in preparation) was adapted to the new requirement. This allowed the test to be conducted within approximately six months of the need being identified. Since there is no on-going underground nuclear test program, a six month capability is not practical.

Question 30. Except for the money earmarked for the Nevada Operations Office, no nuclear test readiness money is earmarked for the nuclear weapons laboratories. Why is this? Do the laboratories not support nuclear test readiness?

Answer. Nuclear test readiness is an integral part of the laboratories' experimental programs. Nuclear test readiness funds at the laboratories are incorporated into the general laboratory R&D budget. The laboratories look to the Nevada Operations Office (NV) as the center of the test readiness effort. In partnership with NV, the laboratories develop the readiness posture by maintaining people, procedures, facilities, and equipment consistent with readiness planning at the Nevada Test Site (NTS). The experiments conducted at the laboratories and at NTS (such as subcritical experiments) are a significant component of the readiness posture. The laboratories stand firmly in support of the nuclear test readiness program, with a major component derived through the execution of stockpile stewardship experiments.

DETERMINING AN APPROPRIATELY-SIZED NUCLEAR WEAPONS COMPLEX

The Department has been reviewing options for determining an appropriately-sized nuclear weapons complex for over a year. This activity involves reviewing and assigning the various "stockpile stewardship and management" missions among the three weapons laboratories (Los Alamos, Lawrence Livermore, and Sandia) and the four production plants (Savannah River, Kansas City, Pantex, and Oak Ridge). The Department was scheduled to release its "Record of Decision" on this matter months ago; however, no release has occurred. This has bred considerable anxiety and uncertainty throughout the complex and exacerbated tensions between the labs and the plants.

Question 31. Why has the Department delayed release of its "Record of Decision" for the Stockpile Stewardship and Management Programmatic Environmental Impact Statement (PEIS)? Does the delay have anything to do with the Administration's desire that nothing interfere with completion and signing of a Comprehensive Test Ban Treaty? What is more important to the Department—"right-sizing" the nuclear complex or achieving a CTBT?

Answer. The Stockpile Stewardship and Management Final PEIS has been delayed because the Department received many comments on the draft document and has needed additional time to fully evaluate and respond to those comments. The PEIS is currently undergoing final internal review. Both "right-sizing" the nuclear complex and achieving a Comprehensive Test Ban Treaty are important to the Department.

Question 32. When will the "Record of Decision" be released?

Answer. In accordance with the National Environmental Policy Act, the Record of Decision cannot be made until at least thirty days after the Final PEIS has been filed with the Environmental Protection Agency and published in the Federal Register.

Question 33. Does the Department agree that there is an important role for the weapons labs and the production plants? What missions will be shifted from the plants to the labs, and vice versa, and why?

Answer. Both, the weapons laboratories and the production facilities, are necessary to a successful stockpile stewardship program. The preferred alternatives described in the draft Stockpile Stewardship and Management PEIS would preserve the critical capabilities, capacity, and unique assets that exist in DOE's production plants and the laboratories. Although there would be downsizing of the existing production plants commensurate with a smaller stockpile, none of the production plants would be closed with missions shifted to the laboratories. The preferred alternative would provide enhanced experimental facilities that would enable the Department to assure the continued safety and reliability of the nuclear weapons stockpile in the absence of underground nuclear testing.

Question 34. What is the Department's view on the requirement to produce new plutonium pits? Beginning when and in what amounts? Under DOE's plan, will the capability exist to produce more than approximately 50 pits per year? If not, why? Where will such a "reconstitution" capability exist and how will it be established?

Answer. Limited fabrication of replacement pits is required to maintain the capability and to replace pits used in the weapons surveillance program, as well as to correct stockpile problems if they occur. Because of the expected small demand for the fabrication of replacement plutonium pits over the next 10 or more years, the Stockpile Stewardship and Management PEIS would establish a capacity to produce up to approximately 50 new pits with a surge capacity to 80, if required. Consideration was given to establishing a larger fabrication capacity; however, historical pit surveillance data indicated that a larger capacity was unnecessary. DOE will perform development and demonstration work at its operating plutonium facilities over

the next 5 years to assess alternative modular facility concepts that could be utilized if larger pit fabrication capacity becomes necessary. Appropriate environmental and siting analyses would be performed at that time.

STAFFING

Question 35. Mr. Curtis and Dr. Reis testified that the number of skilled technical personnel at the laboratories have been stabilized and that the personnel issue at the laboratories is acceptable. The 1995 Authorization, SEC. 3131, required that the Department submit a report on the demographic trends of personnel at the laboratories. When will the Department submit this report? What information did Mr. Curtis and Dr. Reis base their opinion on? Please provide this information. Has demographic trending information been developed for the production sites? Please provide this information.

Answer. The Department expects to submit the report required by Section 3131 by December 1996.

The testimony provided is based on discussions with the laboratory directors and other senior laboratory officials.

No demographic trends information has been developed for the production sites.

Question 36a. Dr. Reis testified that the Department was maintaining production personnel by developing partnerships with industry. Please describe this partnership. What steps have been taken to implement this partnership? Please describe the results.

Answer. The Defense Programs Technology Partnership Program supports the nuclear weapons mission through a diversified portfolio of partnership activities with industry. Partnerships are pursued to maintain, strengthen, and/or advance nuclear weapons complex core competencies, critical technologies, and/or key capabilities. Projects are cost shared. Industry partners bear the costs of their technology partnership activities commensurate with the risks taken and benefits derived.

Defense Programs has issued a Technology Partnership Program Plan which delineates program mission, goals and policy; and describes the roles and responsibilities of the DP program office, the operations offices, and the laboratories/facilities. Individual laboratories and facilities submit annual technology partnership plans to Headquarters for approval. Laboratories and facilities are responsible for implementing and carrying out the technology partnership program consistent with DOE policy and guidelines.

Projects undertaken at the production facilities focus on the following technology areas: Manufacturing Technology, Precision Manufacturing, Advanced Information Technologies, Quality Assurance, and Energy and Environmentally Conscious Manufacturing.

Since 1992 DOE Defense Programs has provided approximately \$89 million to the production facilities to fund 65 technology partnership projects. Some of the major projects and their benefits are described below.

The National Machine Tool Initiative, through partnership activities with the domestic machine tool industry, assists the weapons production facilities in maintaining and developing precision machining and metalworking capabilities vital to the weapons component development and manufacturing missions of DOE.

TEAM (Technologies Enabling Agile Manufacturing) is a partnership among the weapons production plants, the weapons laboratories, other government agencies, universities, and industrial companies, with the objective of developing and deploying integrated technologies that will enable manufacturing enterprises to bring cost-effective, quality products rapidly to market. In 1996 a Material Removal Demonstration was held at the General Motors Powertrain plant in Pontiac, Michigan. GM was electronically linked to nine geographically distributed locations including two weapons plants, the weapons laboratories, the University of Illinois, Hughes, and Ford Motor Company. The demonstration, which was interactive and in real time, encompassed the "product realization process" for a mechanical component fabricated by material removal processes. The demonstration utilized and integrated dozens of DOE and commercially developed design and manufacturing software packages over at least nine different computer platforms including Crays, Sun Workstations, and PCs. This is the first known demonstration to achieve this degree of software integration and hardware interoperability resulting in the manufacture of a real mechanical component.

There is an active Small Business Initiative (SBI) at the production facilities which assists the small business community in ways that contribute to their competitiveness and help make DOE's manufacturing enterprise, more cost-effective, flexible, and environmentally sound. The SBI carries out its activities through the

following mechanisms: technical assistance, personnel exchanges, collaborative partnerships, intermediary relationships, facility utilization, and training.

Another significant effort at the production facilities is the Advanced Manufacturing-National Information Infrastructure program (AM-NII). The AN-NII program is working to build and strengthen the weapons complex communications infrastructure while partnering with U.S. industry to provide and gain equal access to advanced information infrastructure technologies. The program is organized into five thrust areas where technical advancements are needed by DOE to promote business integration in the manufacturing environment: distributed simulation, technical data exchange, electronic commerce, information security, and enterprise modeling.

Question 36b. Dr. Reis testified that the Department was maintaining production personnel by developing partnerships with industry. What other activities is the Department using to maintain technical staff at the production facilities? Please describe the results.

Answer. Over the last few years the Production Capability Assurance Program (PCAP) has maintained skilled personnel and critical processes at the plants. PCAP has teamed laboratories and plants to focus on skills and processes needed for pit production, secondaries, assembly/disassembly, high explosives and non nuclear components. In each area, critical parts and assemblies are manufactured to demonstrate continued capability and capacity at each site.

In FY 1997, consistent with Congressional direction, Defense Programs is in the process of authorizing the plants, through our field offices, to plan fellowships to help maintain the skills and knowledge of the staffs at the production plants, within available funds.

Question 37a. Dr. Reis testified that the ASCI, NIF, and Contained Firing Facility are maintaining technical staff at the Lawrence Livermore National Laboratory. Please describe how these programs are maintaining technical staff today and how they will in the future.

Answer. Without nuclear testing, confidence in the nuclear deterrent will be dependent upon the competency of the people who make the scientific and technical judgements related to the safety and reliability of the stockpile. The Accelerated Strategic Computing Initiative (ASCI), the National Ignition Facility (NIF), and the Contained Firing Facility (CFF) are critical for ensuring that the people, present and future, in the laboratories, continue to have the capability to make competent technical judgements.

Specifically, ASCI is designed to accelerate the development of nuclear weapons simulation codes, scientific understanding of weapon behavior, advanced computer platforms, and computing environments and infrastructure. It will draw scientists to work on computational hardware that is beyond the current "state of the art." On July 26, 1996, the President announced the award of a contract for a computer to be delivered to Lawrence Livermore National Laboratory (LLNL) in 1998, that will be capable of three trillion operations per second.

NIF is designed to produce, for the first time in a laboratory setting, conditions of temperature and density of matter close to those that occur in the detonation of nuclear weapons. The ability to study the behavior of matter and the transfer of energy and radiation under these conditions is key to understanding the basic physics of nuclear weapons and predicting their performance. Many scientists (e.g., chemists, engineers, physicists, etc.) are eager to work on this challenge. The NIF project currently has about 300 persons involved in design and project-specific research and development.

CFF's primary purpose is to enclose the present Flash X-Ray (FXR) facility at LLNL's Site 300. The FXR facility utilizes conventional explosive material to detonate explosive assemblies and records the dynamics of the detonation process for analysis. CFF would add more sophisticated data gathering equipment to the FXR. Scientists and engineers have, and will, come to CFF to study the effects of explosives on materials.

Question 37b. What other steps has the Department undertaken to address the concerns as stated in the 12/29/95 report, Nuclear Weapons Personnel at Lawrence Livermore National Laboratory, "the laboratories have serious concerns about their ability to maintain U.S. capability in nuclear weapons research, and to maintain the skilled workforce necessary for this work"? What programs or activities to maintain skills and knowledge have been developed at the other two weapons laboratories, Sandia National Laboratory and Los Alamos National Laboratory?

Answer. The Department's commitment to preserving the core intellectual and technical competencies of the weapons laboratories is demonstrated through its implementation of the Science-Based Stockpile Stewardship program (SBSS). Without nuclear testing, confidence in the nuclear deterrent will be dependent upon the competency of the people who make the scientific and technical judgements related to

the safety and reliability of the stockpile. Through SBSS, we expect to be able to retain and recruit a skilled workforce that can maintain our nuclear weapon stockpile. This will be done by developing enhanced experimental and computational capabilities which will keep existing skills sharp and train new staff. The laboratories also have programs that allow postdoctoral students to further their research by working at the laboratories. In addition, through Laboratory Directed Research and Development (LDRD) activities, the Laboratory Directors can use current funds to strengthen scientific vitality and core competencies.

Question 37c. What programs or activities to maintain skills and knowledge have been developed at the production facilities?

Answer. The Department's commitment to preserving the core intellectual and technical competencies of the manufacturing plants is demonstrated through the Stockpile Management Program (SMP). SMP will ensure that the people, present and future, in the production plants continue to have the capability to make competent technical judgements concerning nuclear weapons.

Further, over the last few years the Production Capability Assurance Program (PCAP) has maintained skilled personnel and critical processes at the plants. PCAP has teamed laboratories and plants to focus on skills and processes needed for pit production, secondaries, assembly/disassembly, high explosives and non nuclear components. In each area, critical parts and assemblies are manufactured to demonstrate continued capability and capacity at each site.

In FY 1997, consistent with Congressional direction, Defense Programs is in the process of authorizing the plants, through our field offices, to plan fellowships to help maintain the skills and knowledge of the staffs at the production plants, within available funds.

NUCLEAR TEST READINESS

Question 38. Mr. Curtis and Dr. Reis testified that there has been an erosion in the Department's nuclear test readiness capability and that the Department is addressing this issue. What is the Department's plan to stop this erosion? What are the specific actions addressing personnel, facility, equipment, and funding issues related to nuclear test readiness? When will this plan be released? What criteria is the Department using to measure readiness?

Answer. From 1993 to the present, there has been a planned relaxation of nuclear test readiness requirements and an associated planned reduction in capabilities. This relaxation to the present 2-3 year nuclear test readiness posture was consistent with Presidential direction. In order to maintain this readiness posture, the Department is continuing to fund the appropriate physical infrastructure at the Nevada Test Site (NTS), including the roads, utilities, security, and environmental compliance items, to support the specialized facilities and equipment needed for nuclear testing, and to employ, utilize, and exercise the field operations and technical staff that would be needed if the Department is called upon to conduct a nuclear test in a 2-3 year time frame. A DOE Test Readiness and Exercise/Activity Plan is developed annually describing the specific planned activities that are designed to demonstrate our ability to perform the majority of the functions needed for a nuclear test, without the actual execution of a nuclear test. Those functions not addressed are those which could be reconstituted within the 2-3 year time frame. The Department will measure its success in fulfilling its mandate for 2-3 year nuclear test readiness by judging its success in completion of these activities.

As part of the Stockpile Stewardship Test Readiness capability, an activity is underway to establish a Retiree Corps program. This group will include retired personnel from DOE, the National Laboratories, and former and current NTS contractor organizations. Their backgrounds will be in the disciplines and specialties needed to assist and advise in preparing and conducting a nuclear test in a safe and efficient manner.

Question 39. Mr. Curtis and Dr. Reis testified that the Department's plan for maintaining test readiness was based upon the conduct of sub-critical experiments and exercises. Given that no sub-critical experiments nor any fully-integrated exercises were conducted in FY 1996, how has the Department maintained nuclear test readiness, specifically, the skills and knowledge of its technical staff? What readiness activities can the Department show for the approximately \$200 million that was allocated for test readiness in FY 1996? How many sub-critical experiments and fully-integrated exercises are scheduled for FY 1997? Please provide a schedule.

Answer. The Department retains in place the capabilities needed to conduct a nuclear test in a 2-3 year time frame, consistent with Presidential direction. These capabilities include the appropriate infrastructure, the specialized facilities and equipment, and the field operations and technical personnel needed for nuclear testing

if called on to do so within the required time frame. These capabilities were available in FY 1996 had the Department been called on by the President for this purpose. In FY 1996, the Department had planned to assure itself that these capabilities were fully up to par by utilizing them in a number of subcritical experiments as well as several smaller scale activities and exercises. While preparing the Site-Wide Environmental Impact Statement for the Nevada Test Site (SWEIS), the Department postponed the conduct of the subcritical experiments planned for FY 1996 in order to review the potential environmental impacts of such experiments. Approximately 25 small scale activities and exercises, which contributed to most aspects of test readiness, proceeded as planned.

In addition, the Department has developed two fully integrated test control center and function specific exercise employing the majority of capabilities required to conduct a nuclear test. The first exercise was conducted in the third quarter of FY 1996 and the second is scheduled for the first quarter of FY 1997.

On October 18, 1996, the final SWEIS was published in the Federal Register. Contingent on a favorable record of decision (ROD) on the SWEIS, which can be no sooner than 30 days after the above date, the Department plans to conduct, in FY 1997, three or four subcritical experiments. Successful completion of these integrated complex experiments (as well as several smaller scale activities) will demonstrate that the Department possesses the required level of nuclear test readiness. The first of the subcritical experiments is tentatively planned for the second quarter of FY 1997.

Question 40. Dr. Reis testified that the Department has developed the "Grey Beard" program to address test readiness issues. Please describe this program? How many people are in this program? What activities have these individuals participated in?

Answer. As part of the Stockpile Stewardship Test Readiness capability, an activity is underway to establish a Retiree Corps program. This group will include retired personnel from DOE, the National Laboratories, and former and current NTS contractor organizations. Their backgrounds will be in the disciplines and specialties needed to assist and advise in preparing and conducting a nuclear test in a safe and efficient manner.

The program plan is currently under development and is tentatively scheduled for completion in July 1997. The number of people that will be included has not been firmly established. The functions of the members in the corps will reflect their individual expertise and experience. The corps will include a wide range of individuals such as former test controllers, test directors, containment analysts and evaluators, safety engineers, arming and firing technicians, drilling engineers, and diagnostic technicians, all of whom will be used to provide advice and assistance if the need arises for nuclear test operations.

PRODUCTION

Question 41. Dr. Reis testified that staff from the production facilities are part of a team working in Headquarters. Please describe this team? What is the level of personnel participating on this team? How many production facility staff are on this team? What production facilities were represented in FY 1996 and for what length of time? What are the future plans for this team?

Answer. The Defense Programs Science Council was established by Dr. Reis to provide technical advice to the Assistant Secretary for Defense Programs (ASDP) and other senior Defense Programs (DP) officials pertinent to DP issues. The Council's work includes research and preparation of joint position papers on technical matters associated with the nuclear weapons program. Performance of this role requires frequent interactions with various Defense Program offices and Department of Energy organizations as well as Department of Defense organizations. The members of the Science Council also act as a conduit with their respective organizations and facilitate access to timely technical support to the DP decision making process. Upon completion of a member's temporary assignment, the member returns to their home organization with a better understanding of the issues facing Headquarters, the dynamics involved in the decision making process, and will continue to act as a contact for DP technical support at the respective office, laboratory and production plant.

The Defense Programs Science Council is staffed by five or more senior technical representatives from Lawrence Livermore National Laboratory (LLNL), Los Alamos National Laboratory (LANL), Sandia National Laboratories (SNL) and the Nevada Operations Office (DOE/NV) on a full time basis. One additional representative is provided by the production complex and is rotated among Oak Ridge Y-12, Pantex, Savannah River, and Kansas City Plants. Other DP program sites may be requested

to provide Science Council representation when warranted by current DP program activities. Each representative spends approximately four months on the Council.

The council participates in updating the annual Stockpile Stewardship and Management Plan which was presented to the Congress last Spring. This plan will allow the Department to assure the integrity of the nuclear weapons stockpile without underground nuclear testing. The council also receives a lot of ad hoc assignments from the Assistant Secretary and his staff on various technical issues.

STOCKPILE STEWARDSHIP

Question 42. The statement was made that the Department is "mining testing data with computers." How is the Department ensuring that this data is properly preserved? What formal program has the Department developed to safeguard this information? What is the current level of effort? What is the future level of effort? What programs are "mining" this data? What is the level of effort for these programs?

Answer. In November 1995, the Department formalized the Nuclear Weapons Information Group (NWIG). The charter of the NWIG is to define, develop, and promote requirements, standards, tools, techniques, and formats to enable continuing and appropriate access to nuclear weapons data, information, and knowledge across the DOE weapons complex. Participants in the NWIG include representatives from Los Alamos National Laboratory, Lawrence Livermore National Laboratory, Sandia National Laboratory, the Nevada Test Site, the Pantex Plant, the Oak Ridge Y-12 Plant, and the Kansas City Plant.

The NWIG operates as a coordinating body for nuclear weapons archiving activities at the individual sites. Its goals is to achieve electronic access to such data throughout the nuclear weapons complex. Ongoing NWIG-sponsored activities include definition of archival standards, creation of tools for data storage and exchange, and ensuring information security.

At the present time, the three nuclear weapons laboratories have the most significant nuclear weapons archiving programs. The total budget for these activities is \$15M to \$20M per year, distributed about equally among Los Alamos, Livermore, and Sandia. Programs supported by these efforts include dual revalidation of the W76, lifetime extension of the W87, and development of B61 Mod 11.



DEPOSITORY

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